

**STATE OF HAWAII**  
**DEPARTMENT OF LAND AND NATURAL RESOURCES**  
Office of Conservation and Coastal Lands  
Honolulu, Hawaii

REF:OCCL:DH

Papohaku Dune Rule Amendment

August 22, 2008

**Board of Land and  
Natural Resources  
State of Hawaii  
Honolulu, Hawaii**

**REGARDING:** Request for Public Hearing and Small Business Impact Determination: Petition to Amend Title 13, Chapter 5, Hawaii Administrative Rules (Chapter 13-5 HAR), to Redesignate a Portion of the State Land Use (SLU) Conservation District General Subzone to the Protective Subzone, Papohaku Beach, Kaluakoi Ahupuaa, Island of Molokai

**PETITIONER:** Department of Land and Natural Resources' (DLNR), Office of Conservation and Coastal Lands (OCCL)

**LANDOWNERS:** Papohaku Ranchland Subdivision Landowners

**LOCATION:** Papohaku Beach, Kaluakoi Ahupuaa, Island of Molokai

**TMK:** (2) 5-1-006:156 (portion)

**PETITION AREA:** Approximately 2 Miles Long (~ 200 to 400 Feet Wide)

**AREA OF PARCEL:** Same

**SUBZONE:** General

**BACKGROUND:**

The beach and coastal dunes are an integral part of the Hawaiian way of life, for subsistence, recreation, cultural, traditional, and spiritual practices, and as burial grounds for their ancestors. Environmentally, dunes function as a barrier to natural hazards, such as tropical storms and coastal surges, and as a filter for run off from the uplands area, which helps maintain a healthy marine ecosystem. Hawaii's dune systems harbor important native plant and animal species. They serve as storm buffers from normal seasonal high waves and episodic high waves, which occur every so often.

It is noted that Papohaku Beach is one of the longest white sand beaches in Hawaii, and the Papohaku Dune system associated with the beach is among the largest in the archipelago. Papohaku Dunes is one of the last relatively intact dune systems in Hawaii, located on the West end of the island of Molokai. This dune system is invaluable to the residents of Molokai foremost, and the state of Hawaii. Papohaku Dune is the first and last line of defense against coastal erosion and episodic high waves for the existing structures located behind it. Because of the significance of dunes, the County of Maui, Planning Department recently adopted a dune-grading ordinance, which prohibits the alteration of coastal dunes without county review.

The Department of Land and Natural Resources (DLNR), Office of Conservation and Coastal Lands (OCCL) is concerned for Papohaku Dune's long-term sustainability. The department has witnessed various cases in which dune vegetation has been removed, landscaping activities have occurred, mechanized vehicles have been observed on the dune, sand mining and extraction has occurred from areas in the back dune system, and dunes have been graded and flattened. Another major problem is the importation of significant amounts of soil at the back of the dune to raise base elevations of homes. The material can and has ended up in the sea during rainstorms, causing mudflows on the beach and turbidity to the normally pristine near shore waters. The above actions forever destroy the natural dune system.

Because of the potential threat to Papohaku Dune, the OCCL supported the Office of Hawaiian Affairs (OHA), and the University of Hawaii at Manoa, Department of Urban and Regional Planning (DURP) Spring 2005 Graduate Practicum class in the development of the *Pāpōhaku Dunes Cultural and Natural Resource Preservation Plan*.

The *Pāpōhaku Dunes Cultural and Natural Resource Preservation Plan* was developed to protect the dunes, prevent further damage, and incorporate planning principles where possible. OHA hired professional consultants in the following fields: archeology, cultural assessment, Geographical Image System (GIS), geology, ecology, botany, and drainage. Data, assessments and recommendations/findings were suggested to protect the dune. Input was received from the Molokai community (5/11/2005, 5/13/2005), county, state, landowners, and relevant stakeholders. The plan provides suggestions to protect Papohaku Dune for current and future generations. Identified objectives include:

- Protect the cultural and natural resources of the dunes;
- Increase awareness of the significance of the cultural and natural resources of Papohaku Dunes and the surrounding area;
- Ensure continued access for Native Hawaiian subsistence and cultural practices;
- Document the issues affecting the dune ecosystem currently;
- Predict those that will affect the dune ecosystem with the anticipated future of continued development;
- Recommend best management practices and regulatory changes that will ensure protection and preservation of the dune area;
- Protect the property and lives of coastal lot-owners;
- Inform all Papohaku lot-owners of the impact of their actions on the dunes;
- Educate coastal lot-owners who wish to preserve and enhance the native vegetation on the dunes located within their property lines about the regulatory process involved;

- Foster the development of a working relationship between the long-time residents of Molokai and the lot-owners of Papohaku; and
- Propose a co-management arrangement and partnership in dune management.

Recommendations in the preservation plan promote cooperative, scientifically based and culturally sensitive management strategies that effectively protect and enhance the dunes while enabling lot owners to enjoy the use of their properties to the greatest degree possible within the current regulatory framework. The aim was to harmonize the letter of the law and the intent and purpose of State Coastal Zone Management and conservation policy with time-honored indigenous ahupuaa land and sea management practices.

A primary recommendation was that the OCCL initiate a Rule Amendment to protect Papohaku for current and future generations. The majority of the dune is located in the State Land Use (SLU) Conservation District, General subzone. Currently, maximum protection for Papohaku Dune is not ensured. The OCCL notes the subject of the report is to change a portion of the subject parcel's current, less restrictive zoning to protect Papohaku Dune, to a more protective zoning classification.

On April 3, 2008, the OCCL Administrator met with the Papohaku Ranchland Subdivision Board members to discuss the proposed rule change. Concerns were voiced regarding: 1) a higher type of permit – Departmental versus Board permit required for tree removal (i.e. Kiawe); and 2) the cost of the CDUA application.

## **DESCRIPTION OF AREA AND CURRENT LAND USE:**

Papohaku Dunes is located mostly in subject parcel, TMK: (2) 5-1-006:0156<sup>1</sup>; it is a shoreline conservation easement area created for the adjacent Papohaku Ranchlands Subdivision landowners. The Papohaku Ranchlands Subdivision possess 1/56<sup>th</sup> ownership interest in this conservation easement area as well as exclusive use of their respective easement portions. Papohaku Beach is located in the Kaluakoi Ahupuaa located on the west end of the island of Molokai. Located mauka of the beach is the subdivision, which is located in the Agricultural District.

**The proposed subzone amendment would apply to only the portion of Lot 156 that was included in the *Pāpōhaku Dunes Cultural and Natural Resource Preservation Plan* (Exhibit 1).**

Molokai, the fifth largest of the major Hawaiian Islands is approximately 261 square miles in size. Molokai was formed by the coalescence of the 1.9 million-year-old West Molokai Volcano and the younger, approximately 1.75 million years old East Molokai Volcano. The Penguin Bank, a platform at 57 meters underwater southwest of Molokai, is thought to have been formed either as an offshore extension of the West Molokai rift zone, or as a separate submerged shield volcano. Lava from the younger East Molokai Volcano flowed westward towards the West Moloka'i Volcano. The pali (cliffs) on the northeast coast formed when the northern flank of the

---

<sup>1</sup> The subject parcel, is 126.173-acres, and is also identified as Lot 403 on Map 19 of Land Court Application No. 1683 of Molokai Ranch, Limited.

East Molokai Volcano slid into the ocean. More recently, the Kalaupapa Peninsula, on the north central coast of Moloka'i, formed when the Kauhako Crater erupted approximately 300,000 years ago.

The Kaluakoi ahupuaa is well known for its vast marine resources, especially Penguin Banks. Along the boulder coastline are habitats for edible mollusks such as opihi, pupuawa, pipipi, and aama crab, while the near shore area containing abundant algae.

### *Geographic Characteristics*

The beach is approximately 2 miles long; it is a high-energy beach that contains one of the largest bodies of calcareous sand<sup>2</sup> in Hawaii. Except for a few coral and algal veneers offshore to the north and south, there are no fringing reefs located on the central west coast of Molokai to protect the beach's sand supply. However, there are offshore areas adjacent to Papohaku Beach large sand fields, with patches of coral and beach rock<sup>3</sup>. Because of this, it has been suggested that the sand originated from Mo'omomi Sand Dunes.

The Mo'omomi sand dunes is comprised of several sandy beaches, and large consolidated and unconsolidated sand dunes, which were formed between 115,000 and 80,000 years ago. At this time the sea level was lower and the reef and sand fields offshore would have been exposed allowing sand to be blown inland. The inland dunes, known as the 'Desert Strip' extend overland to the southwest over 5 ½ miles away, blown by the prevailing northeast trade winds towards Papohaku. However, the connection no longer exists with Papohaku.

Papohaku Beach contains one of the last relatively intact dune systems, known as Paopohaku Dune, in the State of Hawaii. The Papohaku Dunes boundary is unknown. However, in 2004 researchers have identified the frontal and back boundaries of the primary dunes (or the first sand ridge from shore); the secondary dune boundary was not identified. The majority of the primary dune is located in the Conservation District; however only the frontal region of the primary dune is completely within the conservation district; regions of the backside of the primary dune extend into the Agricultural District (**Exhibits 2, 3, 4 & 5**).

The elevation in the immediate vicinity of the primary dune rises from mean sea level (MSL) to approximately 18 meters above msl. The front of the sand dune is approximately 5 to 7 meters above msl. Elevations from North to South vary; lower elevations are between 5 to 8 meters in the North and higher elevations are 8 to 18 meters in the South (**Exhibit 6**).

A geomorphological study (study of the evolution and configuration of landforms or geological structures) of Papohaku Dunes shows homes in the southwestern portion of the Papohaku Ranchlands Subdivision are less susceptible to future erosion and storm damage problems than homes in the northeastern portion because of their higher elevation. The southernmost part and the northeastern portion are relatively low-lying, which make homes in these areas more

---

<sup>2</sup> Calcareous sand in Hawaii is made of calcium carbonate grains originating primarily from the reef ecosystem and substrate.

<sup>3</sup> According to June 1963 beach profile surveys sand extends offshore for more than 1200 feet, there it comes in contact with rock at a depth of approximately 30-35 feet.

susceptible to flooding, storm damage, and erosion because of long-term shoreline retreat. Thus, it is also critical to maintain a healthy dune in these areas to mitigate potential damage from coastal hazards. Papohaku beach and dune system contains an impressive volume of sand; however the system is already struggling and becoming degraded because of pressure from competing uses and a sand budget deficit.

### ***Soils Types and Productivity Rating***

The dune is comprised of Beach Sand (BS) along the west face, and Jacaus sand (JaC) occurs in a band 250 to 600 feet wide along the eastern edge of the beach both types are derived from coral and shell sources.<sup>4</sup> Coastal plots along the Northern region of dunes also include Mala silty clay (MmA).<sup>5</sup> The soil in the Southern coastal lots is mostly made up of very stony land (rVT2)<sup>6</sup>. Patches of land with Molokai silty loam (MuB3) are also found on the Southern end (**Exhibit 7**).

### ***Climatic Characteristics***

West Molokai is relatively arid and experiences approximately 20 to 40 inches of rain per year. Rainfall along the coast at Papohaku averages less than 15 inches of rain per year; occurring between January thru March.

Strong winds on Molokai derive from passing tropical storms and hurricanes, strong trade wind events, and winter Kona storms. Hurricanes and tropical storms are largely summer and fall events - because they usually approach from the east and swing around the island to the northwest, the east, south, and west-facing shores are most vulnerable. However, Molokai's elongated orientation east to west, makes its north shore more vulnerable to high winds out of the east. Trade winds, which dominate an average of 70% of the year, blow from the east and northeast and usually range from 10-20 miles per hour. Periodically, they intensify and strengthen to 25-40 mph for several days on end. Kona storms originate out of the south and southwest, generally in the winter, and can reach significant velocities, impacting south and southwest shores (**Exhibit 8**).

### ***Hydrology Characteristics***

The Papohaku watershed is the largest one in Molokai. Papohaku Beach falls into two watershed: Papohaku and Kaunala. The northern ridge of the Papohaku watershed supplies streams north of Kaluakoi Resort, while the southern ridge supplies streams to the region of the subdivision south of the Papohaku Beach Park. Streams emptying into the southern most region

---

<sup>4</sup> Jaucas soil consists of excessively drained, calcareous soils that occur as narrow strips on coastal plains, adjacent to the ocean. They developed in wind and water deposited sand from coral and seashells. The permeability of Jaucas sand (JaC) is rapid and runoff is very slow. The hazard water erosion is slight, but wind erosion is a severe hazard where vegetation has been removed. The available water capacity is 0.5 to 1.0 inches per foot of soil. Workability is slightly difficult because the soil is loose and lacks stability for use of equipment

<sup>5</sup> The permeability of Mala (MmA) is moderate, runoff is slow, and the erosion hazard is no more than slight. The available water capacity is about 1.4 inches per foot of soil. In low areas, this soil is subject to flooding for short periods during heavy rains. The water is brackish and care is required if it is used for irrigation purposes. The soil is easily compacted and subsoiling may be necessary

<sup>6</sup> Approximately 50 to 75 percent of the surface of this land type is covered with stones and boulders. There are common shallow gullies and a few deep gullies

of the subdivision also originate from the ridges of the Kaunala watershed. All streams emptying into Papohaku Beach are intermittent streams. Because of little rainfall the west side of Molokai is arid. Streams are intermittent and the dryness of the region may result in flash floods during heavy rain (**Exhibit 9**).

Typically, during a rainfall event, storm water will traverse the upland slopes, concentrate in the numerous gullies and ravines and end up at the shoreline area. The gullies and ravines tend to collectively join and provide more concentrated flows that are accommodated by the culvert crossings. Much of the storm water passing toward the shore will back up behind the rear side of the Papohaku Primary Dune and cause ponding; which may reside for a time sufficient to primarily allow percolation to dissipate the standing water. Thus, the rear side of the primary dune is identified as being within the Flood Insurance Rate Mapping (FIRM) Zone A (**Exhibit 10**).

Natural drainage that crosses the Papohaku Ranchlands Subdivision comes from rainfall generated on the West Molokai upland slopes surrounding Mauna Loa town. Storm water runoff from these upland areas passes through Papohaku Gulch, Wahilahe Gulch and other gullies and ravines before it is discharged to the shoreline area of Papohaku Beach.

With more significant events there are lower spots in the primary dune where storm water actually spills out across the dune and enters the shoreline. One of the more noticeable locations where storm water runoff historically entered coastal waters occurs along the Papohaku Gulch corridor. In the past, during almost any rainfall event, storm water was discharged across the Kalakoi Golf Course and entered coastal water at the northwest corner of the dune complex.

### ***Ecosystem Characterization***

A botanical survey of Papohaku Dunes identified plants native and non-native to Molokai, three main plant communities, and the presence of an endangered plant species<sup>7</sup> (**Exhibit 11**).

Twenty-four plant species comprised of native and non-native species were identified at Papohaku<sup>8</sup>:

Federal Status <sup>1</sup>	Origin <sup>2</sup>	Hawaiian Name	Scientific Name	Common Name
	Ind	<i>'Aki 'aki</i>	<i>Sporobolus virginicus</i>	-
E	End	<i>'Akoko</i>	<i>Chamaesyce skottsbergii</i> , <i>var. skottsbergii</i>	-
	Ind	<i>'Ākulikuli</i>	<i>Sesuvium portulacastrum</i>	-
	Ind	<i>Alena</i>	<i>Boerhavia repens</i>	-
	End	<i>Hinahina</i>	<i>Heliotropium anomalum</i>	-
	Ind	<i>'Thi</i>	<i>Portulaca lutea</i>	-
	Ind	<i>'ilima</i>	<i>Sida fallax</i>	-
	Nat	<i>Kiawe</i>	<i>Prosopis pallida</i>	Mesquite, algaroba

<sup>7</sup> Only dominant weed categories and a partial list of weed names were recorded.

<sup>8</sup> 1: Federal Status: E, Endangered. 2: Origin: End, endemic; Ind, indigenous; Ind?, questionably indigenous; Nat, naturalized (Species that are introduced by humans, established, and spreading by vegetative or sexual means).

	Ind	<i>Kīpūkai</i>	<i>Heliotropium curassavicum</i>	Seaside heliotrope
	Nat	<i>Mānienie haole</i>	<i>Cynodon dactylon</i>	Bermuda grass
	Ind	<i>Mau'u</i>	<i>Fimbristylis cymosa</i>	-
	Nat	<i>Koa haole</i>	<i>Leucena leucocephala</i>	-
	Ind?	<i>Milo</i>	<i>Thespesia populnea</i>	Portia tree
	Ind	<i>Naupaka kahakai</i>	<i>Scaevola sericea</i>	-
	Ind	<i>'Ōhelo kai</i>	<i>Lycium sandwicense</i>	-
	Nat	<i>Paina</i>	<i>Casuarina species</i>	Common ironwood
	Nat	<i>Ōwī</i>	<i>Verbena littoralis</i>	-
	End	<i>Pā'ūohi'iaka</i>	<i>Jacquemontia ovalifolia</i>	-
	Ind	<i>Pōhinahina</i>	<i>Vitex rotundifolia</i>	Beach vitex
	Ind	<i>Pōhuehue</i>	<i>Ipomoea pes-caprae subsp. brasiliensis</i>	-
	Ind	<i>'Uhaloa</i>	<i>Waltheria indica</i>	-
	Nat	-	<i>Atriplex semibaccata</i>	Australian salt bush
	Nat	-	<i>Poaceae family</i>	Non-native grasses
	Nat	-	<i>Verbesina encelioides</i>	Golden crown-beard

The Coastal Dry Akiaki Grasslands community is nearly continuous along the entire coastal area that was surveyed, and made up the majority of remaining natural area. Plants in this community include aki aki, akulikuli, alena, akoko, hinahina, ihi, ilima, kipukai, ohelo kai, mau'u, pa uohi iaka, pohinahina, pohuehue, and uhaloa intermixed with various non-native grasses and other herbaceous weeds. The plant community grows moderately to vigorously with an apparent reproductive plant population. Non-native grasses encroach along the borders of kiawe forest and other disturbed areas.

Coastal Mixed Shrubland is interspersed between the aki grasslands, which is comprised of aki aki, ilima, koa haole, naupaka kahakai, pohinahina, uhaloa, non-native grasses, and herbaceous weeds. Although individual native plants appear healthy, the plant community is declining. These areas are becoming more disrupted as non-native plants out-compete and replace native plants.

Kiawe dominates the back edge of the sand dunes. The trees create a dense canopy about 10 meters in height. The understory is comprised of aki aki, ilima, non-native grasses and shrubs, and herbaceous weeds with patches of bare ground and plant litter.

Akoko (*Chamaesyce skottsbergii* var. *skottsbergii*) is an endangered species, endemic to Hawaii, and exists only on the islands of Oahu and Molokai. Fewer than one hundred plant individuals were observed clustered in an approximately 1500 m<sup>2</sup> (0.37 acre) area on the coast at Puu Koai. The presence of vigorously growing adult plants with flowers and seedlings indicates a healthy population (**Exhibit 12**).

### ***Major Natural Hazards at Papohaku***

Because of the absence of a shallow fringing reef offshore at Papohaku Beach, it leaves it exposed to the full force of incoming waves. Papohaku Beach faces northwest and is impacted by large swells that arrive from the north and northwest. South and southwest swells that wrap around the west coast of Molokai by the process of diffraction can also affect the beach. Thus, due to the beach's level of exposure, the offshore slope is steep - the shape of the beach can change dramatically over short periods of time.

The Atlas of Natural Hazards in the Hawaiian Coastal Zone notes the Overall Hazard Assessment in the between Laau Point and Papohaku Beach is moderate (4) except for the Puu Koai headland, which is relatively steep and where the assessment is moderately low (3), and Papohaku Beach where it is moderately high (5). Tsunami is high along the low-lying rocky terraces and moderately low at Puu Koai. Stream flooding is low along the entire coast, where few streams and low rainfall occur. High waves are moderately low from Laau Point to Kaunala Bay and moderately high to the north and east, where greater wave energy from northwest swells reaches the shoreline. The storm hazard is moderately high along this coast except at Puu Koai where it is only moderately low. Erosion varies from moderately high, between Laau Point and Kahaiawa; low north to Puu Koai; and high, along Papohaku Beach, which has undergone significant beach loss this century. Sea level rise is a moderately high threat along the low coastal terraces and only low at the headland of Puu Koai. The volcanic/seismic hazard is moderately high between Laau Point and Papohaku Beach, in accordance with its location within the Moloka'i Seismic Zone.

The average rate of long-term erosion over the last 85 years for Pāpōhaku beach is about 1 to over 4 feet per year. The location of highest erosion in Papohaku is along the southwest portion of the beach, consistent with its history as a mined environment. The northern-most segment is also eroding at nearly 3 feet per year, possibly because of end effects related to the rocky headland. But overall, Papohaku at present does not display an eroded appearance. Beach rock is exposed here and there, indicating chronic erosion, but the backshore does not appear to experience direct wave attack. That is, the dune line does not show an erosion scarp or other indication of direct wave attack, and the beach is wide with an apparent abundance of sand along most of its length (**Exhibit 13**).

### ***Infrastructure Evaluation***

Papohaku Beach has four defined access points, located approximately every 1,500 feet. There are no roads and access, water systems, sewage systems, drainage systems, recreational facilities, and utilities. However, there are other improvements man made and natural. Blowouts, or man made trenches, are located mostly on the southern end of Papohaku. Three coastal plots have trenches, however more blowouts may exist which have not been identified. Paths on lithified (hardened) dunes at located the southern end of Papohaku. Man-made paths cutting through the sand dunes to the shoreline exist; four paths originate directly from 4 coastal lots (**Exhibit 14**).

### *Scenic or Visual Resources*

The proposed re-designation from the General Subzone to the Protective subzone is an administrative action only, no land uses are proposed thus there will be no immediate impacts to scenic or visual resources.

### *Cultural Resources and Sites*

Although strong winds and big north swells affect the West Coast, protected embayments along the West Coast served as safe places for landing canoes and shelter. Thus, Papohaku Beach served as a major canoe access point for the West Coast. Because of the access to marine resources there was a fishing village at Papohaku. Papohaku Beach also served as a burial place in the pu'uone on the West Coast.

Further down the coast, a Wahi Pana located on the West Coast is Kaiaka Rock. This major outcropping between Kepuhi and Pāpōhaku is home to a heiau facing Pāpōhaku Beach and was used as an observation tower for fishing and scouting purposes. Just below Kaiaka Rock, facing Pāpōhaku Beach is a canoe heiau. To the south of Pāpōhaku Beach is Pu'u Ko'ai, this area was used to strip the flesh of bodies prior to burial.

### *Wahi Pana (Sacred Places) and their Mo'olelo*

Pāpōhaku, the Stone Wall: the name Pāpōhaku alludes to a historical event that involves an ali'i from the east end of Moloka'i. A chief from east Molokai and a few of his people boarded canoes and set off around the island. They found themselves on the southwest coast of Molokai. They paddled up to some fishermen who had a large catch of ōpelu. Hungry, they began to eat. As they were all eating with great satisfaction, another group of fishermen came by and cried: "Stop. Do not eat the ōpelu. This is the season of ōpelu kapu." However, the visiting chief only had a kapu for eating turtle, so they continued eating.

Mad with outrage and fear, the fishermen attacked the visiting chief and his men. Overpowered, they were brought before the kahuna. The visiting chief became very ill, and the only way to make things right was a human sacrifice to save the chief from death. One of his men offered himself as a sacrifice and the chief recovered.

The kahuna ordered a tree planted on the grave of the willing victim. The grave was on shore; when the tide was high, the waves would wash sand from the grave. Thus, in a very short time, the body would be exposed. In respect and remembrance, the chief ordered his men to build a stone wall about fifty feet long. All with gratitude of their fellow, the chief ordered the wall to continue for another two hundred feet. The chief himself put the last stone on the wall, saying as he did so, "I call this place Pāpōhaku, 'Stone Wall.'" Hawaiian Values: Preserving that which is sacred or scarce (Kapu of the fish 'ōpelu); respect and homage for deeds of unselfishness.

*Settlement Patterns According to Oral Traditions*

According to interviews the west end of Moloka'i was a harsh environment to live in. The rationale for human settlement on this end of the island differs between interviewees: 1) one source states that the ahupua'a of Kaluako'i was where the kauwa, the lowest caste in traditional Hawaiian society, were sent (Kauwa were often used in sacrifices and ostracized from general society), so the isolation afforded by this arid coast would logically be attractive; and 2) other sources state that the kama'aina of this area were renegades, and decided to live on the periphery not out of social pressure but out of a desire to be free from the rule of others. Conversely, oral testimony states that there was a sizable population living on this corner of the island, which is further corroborated by a historian, who claimed that the west end was settled by a group led by two brothers, Kepa and Keau, from Kona on the island of Hawai'i.

Once settlements were established, it appeared that they were able to thrive. The Kaluako'i ahupua'a is the largest on the island of Moloka'i, taking up 46,500 acres, or a third of the land mass. In traditional Hawaiian land management systems, ahupua'a were land sections determined by how many resources they could provide. In water-rich windward areas, ahupua'a could be tiny slivers of land. The larger the ahupua'a, the more land was needed to compensate for lack of resources. Therefore, it can be hypothesized that the vastness of the Kaluako'i area is a reflection of its lack of hydrological resources. This fact may fit with the characterization of the Kaluako'i denizens as either rebellious or outcasts.

The uplands of this area were farmed for 'uala or sweet potato and quarried for the volcanic rock needed for the creation of adzes; thus the name of the ahupua'a, Kaluako'i or adze pit. Below, fishing villages were established along the shoreline. Access to ocean resources seemed to have been paramount to the survival of the people of Kaluako'i, and this is reflected by the great numbers of ko'a (fishing shrines) that were created in these areas; one of the ko'a contained a great number of fishhooks, which seemed to have correlations to the types of fish that were caught along the coast. Along with the ko'a, there were several large heiau, including one dedicated to the successful launching of canoes. Shrines were created in the midlands by which the farming and fishing communities exchanged their goods. These different sites indicate a society that developed relatively sophisticated means by which to survive the rugged environment of Kaluako'i. The inclusion of a holua sled site near Kaiaka Rock also shows that the yield of goods produced by this society was large enough to sustain an ali'i and warrior caste. This also means that it had enough manpower to create these public works as well as having a sustainable human/resource management system, which was successful enough to allow for leisure activities.

The two hills that bound Pāpōhaku beach area were of great cultural significance: Pu'u O Kai'aka housed two major heiau, and Pu'u O Koa'e was used in the burial process. Aside from the sites that these pu'u (hills) contain, they were also utilized as vantage points by which to aid in fishing or as strategic reconnaissance points to assess enemy maritime assaults on the coast. As is the case throughout the Hawaiian archipelago, dunes in this wahi (place) are noted to contain many burials and this has proven to be a source of much contention over modern land use practices in this area.

The lifestyle of the people in Pāpōhaku in the past appears to be comparable to kānaka maoli elsewhere. A brief overview of the oral history reveals that they adhered to the traditional ali'i system along with its strict adherence to the religiously proscribed kapu. There is no clear genealogical chart yet created that provides the lineage of the chiefs of this ahupua'a or shows a timeline when events actually occurred.

### *Synthesis of Oral History and Archeological Studies*

Specifically, in regards to the pu'uone (sand dunes) as a burial place at Pāpōhaku, it is expected that no permanent structural remains would be found because these areas were considered kapu (restricted because of their sacred nature).

With the understanding of pu'uone and their role, coupled with a poor, incomplete survey of the entire subdivision area, it is difficult to gain a stronghold on the historical significance of Pāpōhaku Beach to the kānaka maoli of Kaluako'i. However, there is one site that may shed some insight in understanding this significance. This site SIHP SITE 500, which was, "terrace with internal platform, currently beneath large boulder pile in golf course."

Through oral history and a site visit the site (possibly) is a canoe heiau; name unknown, which is located facing Pāpōhaku Beach because it was one of the only safe landings or canoe accesses on the west coast of Kaluako'i. This site thus becomes a hint; it gives some validations to Summers and her account that Pāpōhaku was a settlement that was generally larger than what was found in Kaluako'i. This is so because the heiau is a sign of gratitude and sacrifice for the resource of Pāpōhaku Beach as a safe canoe access. Logically, kānaka maoli of Kaluako'i in these times would prefer to locate near a canoe access in order to efficiently harvest the bountiful diet resources of the Kaluako'i west coast and Penguin Banks. It is also logical to agree that Pāpōhaku was a somewhat large fishing village because of the two wells found in the area (Punawaikohalea, Wahilauhue) that were able to provide water in such a dry area.

The importance of this site is also compounded with the knowledge of another heiau on the summit of Kaiaka Rock above the canoe heiau, which served as an observation tower for fishing as well as a lookout for incoming canoes.

This further enlightens us upon the notion that Pāpōhaku Beach was a significant resource or locality. The major outcropping between Kepuhi and Pāpōhaku is home to various heiau that face Pāpōhaku Beach. This, further alludes upon the significance of Pāpōhaku Beach to the kānaka maoli who inhabited the west coast of Kaluako'i in the pre-contact era.

### *Historic Properties on Site*

A recent survey was conducted and encompassed the primary dune area, from its western face along the active beach, to its base along the eastern (inland) side. Also included in the survey area were undeveloped portions of Pu'u o Kaiaka that contained previously recorded historic properties, areas of rocky strand along the shoreline, and portions of low-lying flats behind the dunes. The total area examined by surface survey was approximately 200 acres.

The survey identified and recorded thirteen sites. Two additional, previously identified sites (45 and 46) were tentatively located during the survey. Seven out of the 12 sites recorded were previously recorded and have existing SIHP site numbers. Six were assigned new numbers (2470-2475) (**Exhibit 15**).

#### **PROPOSED ACTIONS OF THE PETITIONER:**

The Department is requesting to redesignate a portion of Papohaku Dune, an area that encompasses approximately 2 miles of sand dunes (~200 feet to 400 feet wide) contained in TMK: (2) 5-1-006:156 from the General Subzone to the Protective subzone (**See Draft Rule, Exhibit 16**).

The petition area does not fit within the General Subzone objectives as set forth in §13-5-14 HAR, as the objective of the subzone is to designate open space where specific Conservation uses may not be defined, but where urban use would be premature.

According to the department, the area best fits the objectives of the Protective subzone:

- The objective of this [Protective] subzone is to protect valuable resources in designated areas such as restricted water-sheds, marine, plant, and wildlife sanctuaries, significant historic, archeological, geological, and volcanological features and sites, and other designated unique areas;
- The (P) subzone shall encompass:
  - 1) Lands and waters necessary for protecting watersheds, water sources, and water supplies;
  - 2) Land and waters necessary for the preservation or enhancement of designated historic or archeological sites and designated sites of unique physiographic significance;
  - 3) Areas necessary for preserving natural ecosystems of native plants, fish, and wildlife, particularly those which are endangered; and
  - 4) All lands encompassing the Northwestern Hawaiian islands except Midway island.

Papohaku Beach is located in the Conservation District, General subzone. The ecological, physiological, and cultural resources of Papohaku Dune require added protection due to its uniqueness as one of the last relatively intact dune systems left in the State of Hawaii.

The action covered by this board submittal is the proposed subzone redesignation from the General subzone to the Protective subzone.

#### **STAFF ANALYSIS:**

Pursuant to Chapter 13-5, Hawaii Administrative Rules (HAR), any change to Conservation District Subzone boundaries must be made by amending Chapter 13-5, HAR. Statutes and rules which govern the process by which amendments of Chapter 13-5, HAR, may be made include:

- A. Sections 91-2 through 91-7, Hawaii Revised Statutes (HRS);
- B. Section 2, Act 168, Session Laws of Hawaii 1998;
- C. Section 183 (c)-4, HRS;
- D. Section 13-1, Hawaii Administrative Rules (HAR); and
- E. Section 13-5-5, HAR.

Petitions to amend the administrative rules are reviewed by the Legislative Reference Bureau and the Department of the Attorney General. In general, in order to take effect, proposed Rule Amendments must obtain departmental and gubernatorial authorization for both public hearing and final approval.

#### **Authorization for Public Hearing:**

The first major step to amend the administrative rules is to hold a Public Hearing. The request for public hearing is the subject of this staff submittal. Should the Board of Land and Natural Resources (BLNR) approve the subject request, the department would forward the request for public hearing to the Governor for approval. At the BLNR's discretion, the BLNR may modify the proposed rule change at this time.

#### **Approval/Disapproval:**

After public hearing, the second major step would be to seek the BLNR's discretion to forward the proposed rule change to the Governor for approval. The BLNR may also modify the proposed rule change at that time. Both the Legislative Reference Bureau and the Department of the Attorney General would review, and the Department of the Attorney General approve as to form, the proposed rule change prior to forwarding the proposed rule change to the Governor for decision.

#### **State Policies and Procedures:**

The Governor of the State of Hawaii has issued Administrative Directive No. 99-02 to guide policy and procedures for the adoption, amendment or repeal of administrative rules. The Governor directs that petitions for administrative rule changes address certain policy topic areas. By this submittal, staff proposes that the general content of this petition be transmitted to the Governor's office along with any approved request for public hearing.

#### **Chapter 343, HRS, Requirements:**

In conformance with Title 11, Chapter 200, Hawaii Administrative Rules (HAR), Chapter 343 Hawaii Revised Statutes (HRS) , an Environmental Assessment and a Conservation District Use Application are required for certain land uses, unless they can be considered to be exempt. The process does not require the filing of an environmental assessment and/or CDUA as no land uses are being proposed by this action.

As noted the *Pāpōhaku Dunes Cultural and Natural Resource Preservation Plan* was developed to protect the dunes, prevent further damage, and incorporate planning principles

where possible. Data, assessments and recommendations/findings were suggested to protect the dune. The plan provides suggestions to protect Papohaku Dune for current and future generations.

**Section 2 of Act 168, Session Laws of Hawaii 1998, The Hawaii Small Business Regulatory Flexibility Act:**

Staff is of the opinion that the proposed rule amendment will not impact or affect small business. Therefore, no "Small Business Impact Statement" or "Small Business Statement" is required.

**STAFF RECOMMENDATION:**

That the Board of Land and Natural Resources:

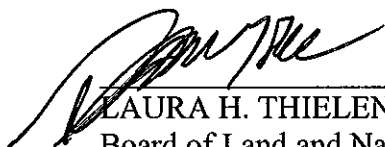
1. Approve the department's request to process the subject petition to amend Chapter 13-5, Hawaii Administrative Rules;
2. Determine that the proposed rule amendment will not impact or affect small business;
3. Authorize the forwarding of a request for Public Hearing to the Governor, State of Hawaii, on the proposed rule amendment;
4. Upon executive approval, publish the Public Hearing notice; and
5. Upon executive approval, appoint a representative of the Board or Department of Land and Natural Resources as Public Hearing master for the proposed rule amendment's public hearing.

Respectfully Submitted,

*Dawn T. Hegger*

Dawn T. Hegger  
Senior Staff Planner

Approved for submittal:

  
\_\_\_\_\_  
LAURA H. THIELEN, Chairperson  
Board of Land and Natural Resources

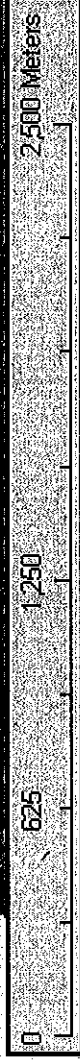
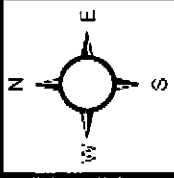
# TMK (2) 5-1-006:156 (portion): Kaluako`i, Moloka`i

The proposal is to reclassify the portion of TMK (2) 5-1-06:156 between Pu`u O Kaiaka and Po`olau from the General to the Protective Conservation District Subzone.

Pu`u O Kaiaka

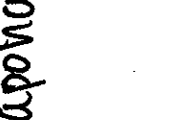
Pāpōhaku

Po`olau

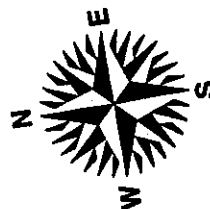


*Papophax*

*Illo Pt.*



2



2



# Primary Sand Dune at Papohaku

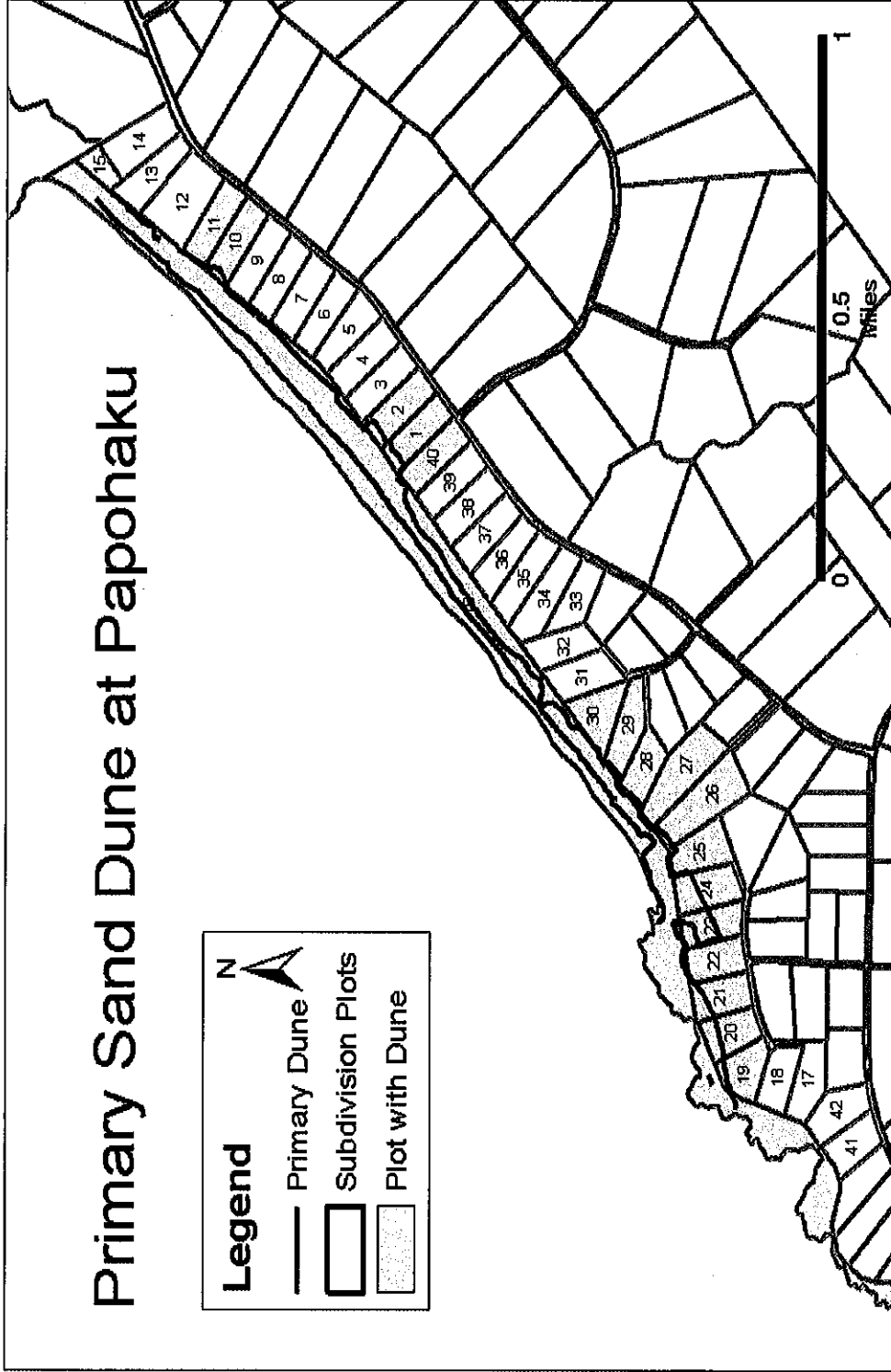
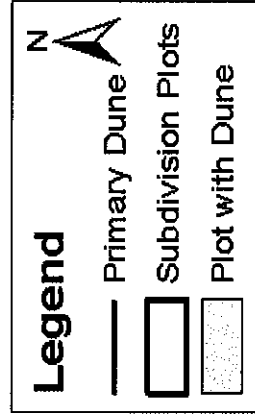


Figure 6.4: Coastal Plots that Include the Sand Dunes

(Lot numbers do not represent TMK numbers)

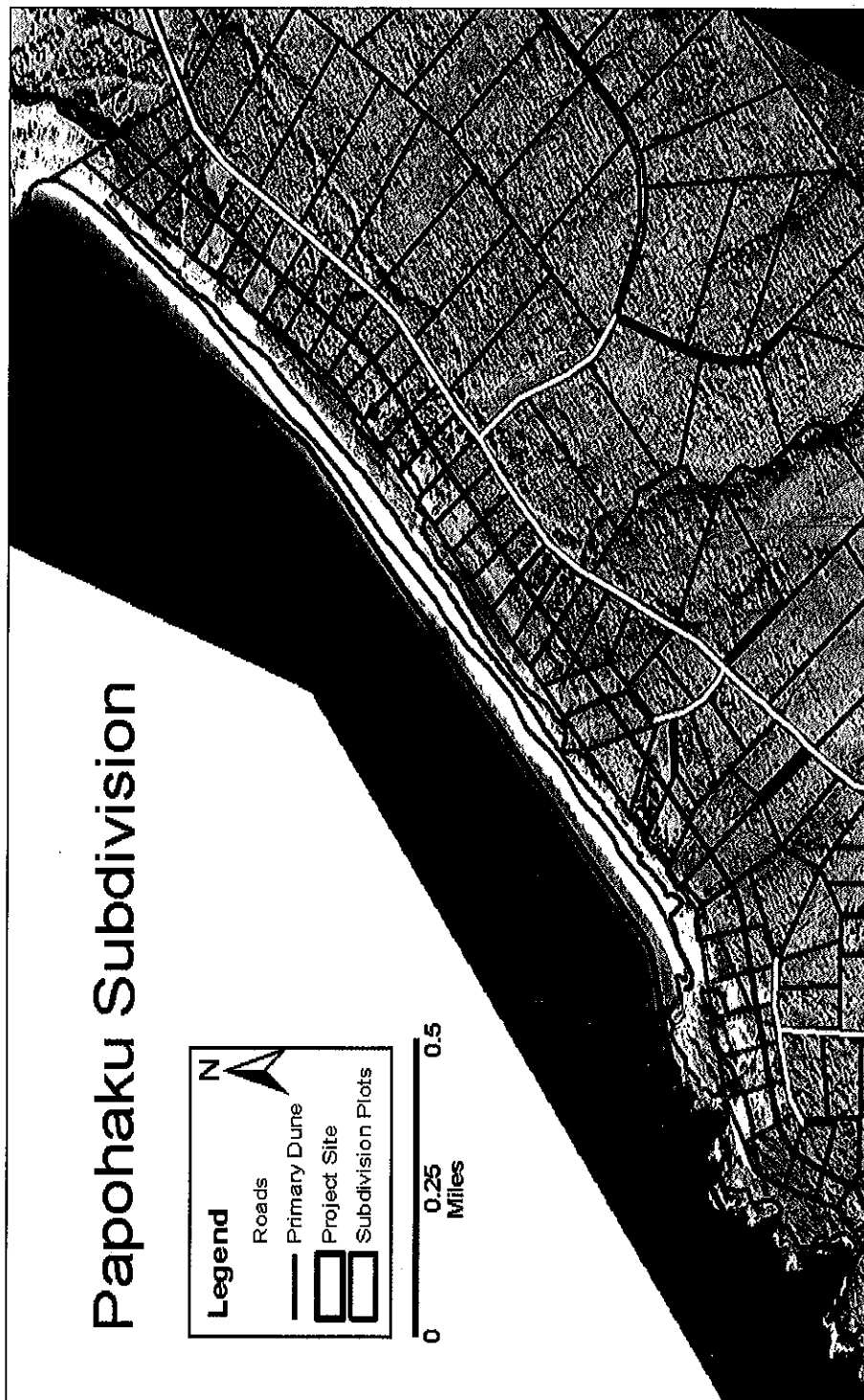
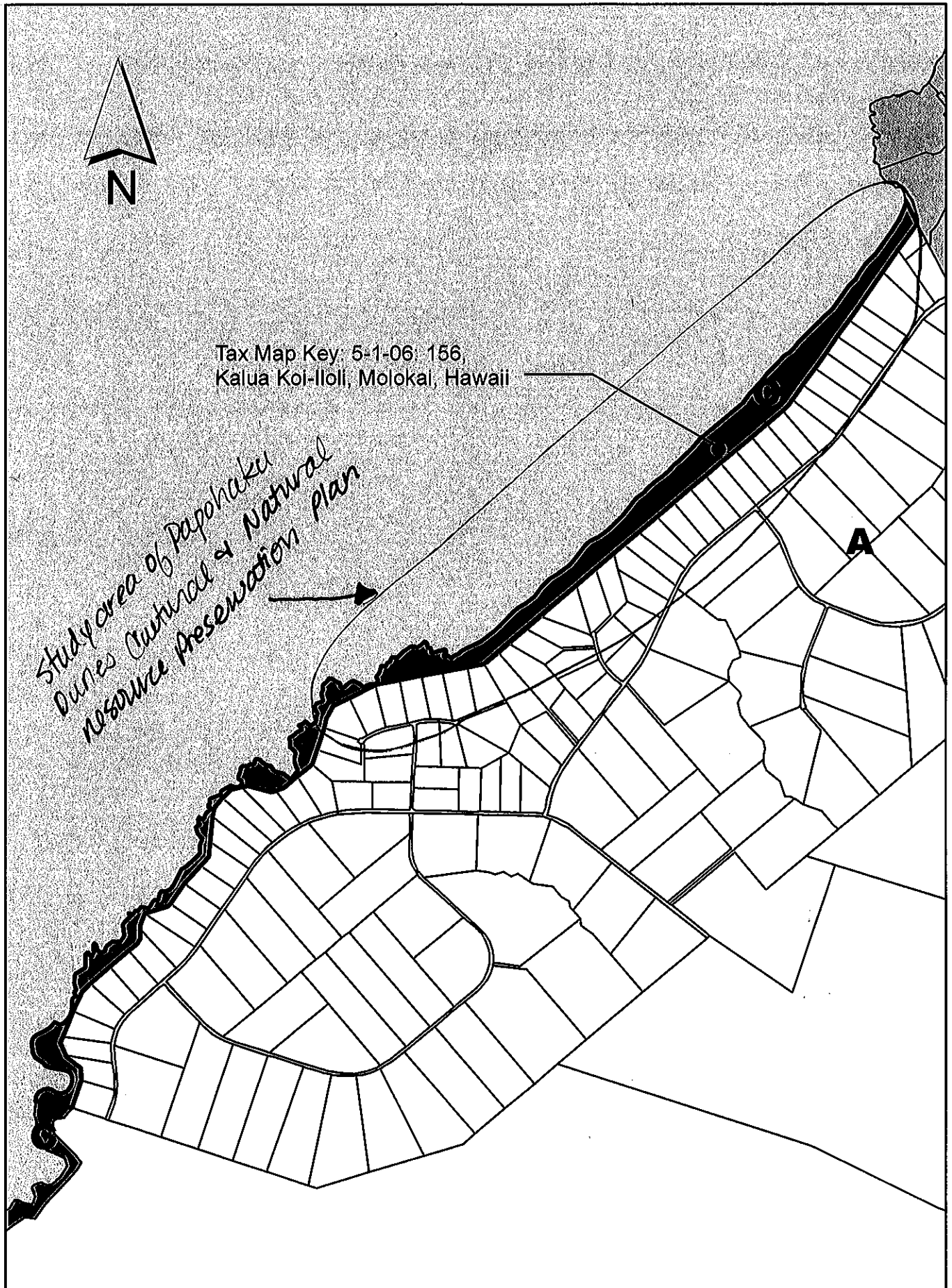


Figure 6.2: The Pāpōhaku Primary Sand Dunes and Surrounding Areas

# State Land Use Commission Map



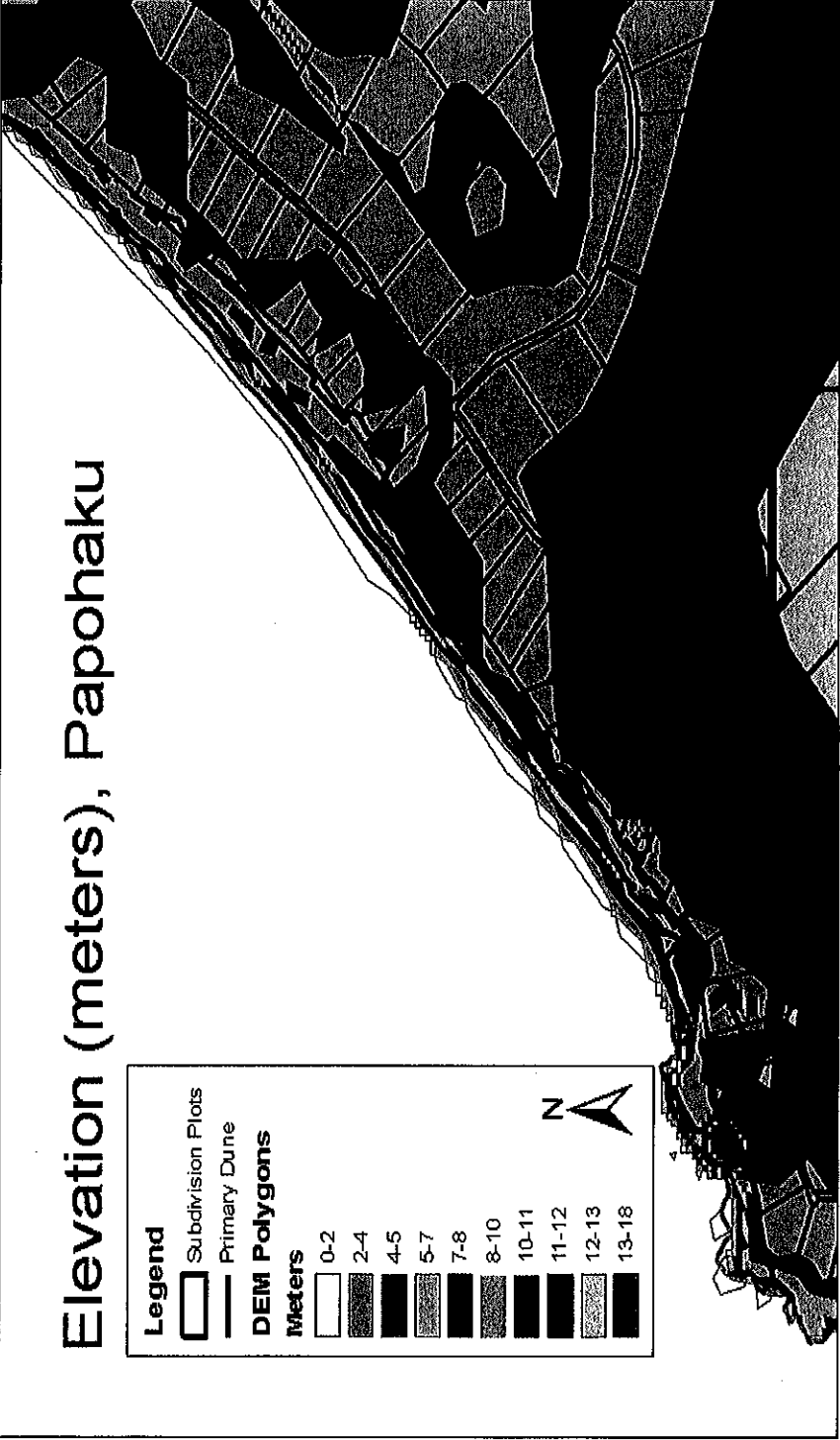


Figure 6.5: Elevation at Pāpōhaku (Polygons)

# Soil Type at Papohaku

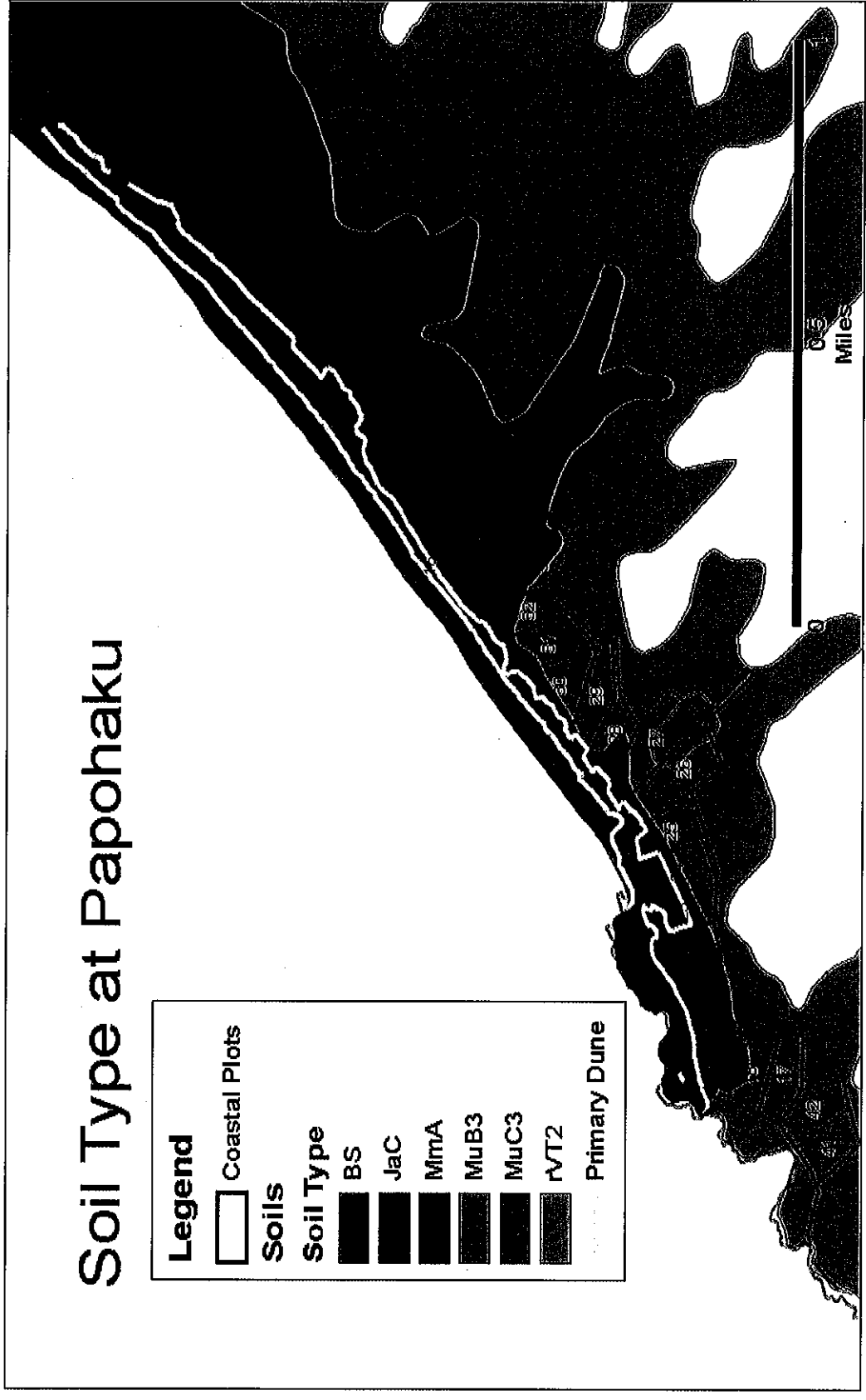
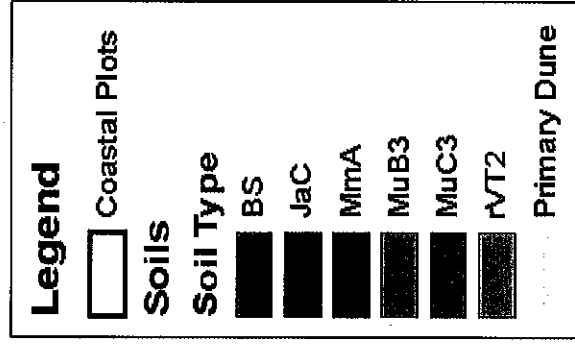


Figure 6.7: Soil Types at Pāpōhaku  
(Lot numbers do not represent TMK numbers)



0 2 4 MILES  
0 2 4 KILOMETERS

157'10  
167'07  
187'46  
187'30  
187'35  
187'40  
187'45  
187'50  
187'55  
187'60  
187'65  
187'70  
187'75  
187'80  
187'85  
187'90  
187'95  
188'00  
188'05  
188'10  
188'15  
188'20  
188'25  
188'30  
188'35  
188'40  
188'45  
188'50  
188'55  
189'00  
189'05  
189'10  
189'15  
189'20  
189'25  
189'30  
189'35  
189'40  
189'45  
189'50  
189'55  
190'00  
190'05  
190'10  
190'15  
190'20  
190'25  
190'30  
190'35  
190'40  
190'45  
190'50  
190'55  
191'00  
191'05  
191'10  
191'15  
191'20  
191'25  
191'30  
191'35  
191'40  
191'45  
191'50  
191'55  
192'00  
192'05  
192'10  
192'15  
192'20  
192'25  
192'30  
192'35  
192'40  
192'45  
192'50  
192'55  
193'00  
193'05  
193'10  
193'15  
193'20  
193'25  
193'30  
193'35  
193'40  
193'45  
193'50  
193'55  
194'00  
194'05  
194'10  
194'15  
194'20  
194'25  
194'30  
194'35  
194'40  
194'45  
194'50  
194'55  
195'00  
195'05  
195'10  
195'15  
195'20  
195'25  
195'30  
195'35  
195'40  
195'45  
195'50  
195'55  
196'00  
196'05  
196'10  
196'15  
196'20  
196'25  
196'30  
196'35  
196'40  
196'45  
196'50  
196'55  
197'00  
197'05  
197'10  
197'15  
197'20  
197'25  
197'30  
197'35  
197'40  
197'45  
197'50  
197'55  
198'00  
198'05  
198'10  
198'15  
198'20  
198'25  
198'30  
198'35  
198'40  
198'45  
198'50  
198'55  
199'00  
199'05  
199'10  
199'15  
199'20  
199'25  
199'30  
199'35  
199'40  
199'45  
199'50  
199'55  
200'00  
200'05  
200'10  
200'15  
200'20  
200'25  
200'30  
200'35  
200'40  
200'45  
200'50  
200'55  
201'00  
201'05  
201'10  
201'15  
201'20  
201'25  
201'30  
201'35  
201'40  
201'45  
201'50  
201'55  
202'00  
202'05  
202'10  
202'15  
202'20  
202'25  
202'30  
202'35  
202'40  
202'45  
202'50  
202'55  
203'00  
203'05  
203'10  
203'15  
203'20  
203'25  
203'30  
203'35  
203'40  
203'45  
203'50  
203'55  
204'00  
204'05  
204'10  
204'15  
204'20  
204'25  
204'30  
204'35  
204'40  
204'45  
204'50  
204'55  
205'00  
205'05  
205'10  
205'15  
205'20  
205'25  
205'30  
205'35  
205'40  
205'45  
205'50  
205'55  
206'00  
206'05  
206'10  
206'15  
206'20  
206'25  
206'30  
206'35  
206'40  
206'45  
206'50  
206'55  
207'00  
207'05  
207'10  
207'15  
207'20  
207'25  
207'30  
207'35  
207'40  
207'45  
207'50  
207'55  
208'00  
208'05  
208'10  
208'15  
208'20  
208'25  
208'30  
208'35  
208'40  
208'45  
208'50  
208'55  
209'00  
209'05  
209'10  
209'15  
209'20  
209'25  
209'30  
209'35  
209'40  
209'45  
209'50  
209'55  
210'00  
210'05  
210'10  
210'15  
210'20  
210'25  
210'30  
210'35  
210'40  
210'45  
210'50  
210'55  
211'00  
211'05  
211'10  
211'15  
211'20  
211'25  
211'30  
211'35  
211'40  
211'45  
211'50  
211'55  
212'00  
212'05  
212'10  
212'15  
212'20  
212'25  
212'30  
212'35  
212'40  
212'45  
212'50  
212'55  
213'00  
213'05  
213'10  
213'15  
213'20  
213'25  
213'30  
213'35  
213'40  
213'45  
213'50  
213'55  
214'00  
214'05  
214'10  
214'15  
214'20  
214'25  
214'30  
214'35  
214'40  
214'45  
214'50  
214'55  
215'00  
215'05  
215'10  
215'15  
215'20  
215'25  
215'30  
215'35  
215'40  
215'45  
215'50  
215'55  
216'00  
216'05  
216'10  
216'15  
216'20  
216'25  
216'30  
216'35  
216'40  
216'45  
216'50  
216'55  
217'00  
217'05  
217'10  
217'15  
217'20  
217'25  
217'30  
217'35  
217'40  
217'45  
217'50  
217'55  
218'00  
218'05  
218'10  
218'15  
218'20  
218'25  
218'30  
218'35  
218'40  
218'45  
218'50  
218'55  
219'00  
219'05  
219'10  
219'15  
219'20  
219'25  
219'30  
219'35  
219'40  
219'45  
219'50  
219'55  
220'00  
220'05  
220'10  
220'15  
220'20  
220'25  
220'30  
220'35  
220'40  
220'45  
220'50  
220'55  
221'00  
221'05  
221'10  
221'15  
221'20  
221'25  
221'30  
221'35  
221'40  
221'45  
221'50  
221'55  
222'00  
222'05  
222'10  
222'15  
222'20  
222'25  
222'30  
222'35  
222'40  
222'45  
222'50  
222'55  
223'00  
223'05  
223'10  
223'15  
223'20  
223'25  
223'30  
223'35  
223'40  
223'45  
223'50  
223'55  
224'00  
224'05  
224'10  
224'15  
224'20  
224'25  
224'30  
224'35  
224'40  
224'45  
224'50  
224'55  
225'00  
225'05  
225'10  
225'15  
225'20  
225'25  
225'30  
225'35  
225'40  
225'45  
225'50  
225'55  
226'00  
226'05  
226'10  
226'15  
226'20  
226'25  
226'30  
226'35  
226'40  
226'45  
226'50  
226'55  
227'00  
227'05  
227'10

EX-109

Pāpōhaku Dunes Preservation Plan  
DURP, Spring 2005, Planning Practicum

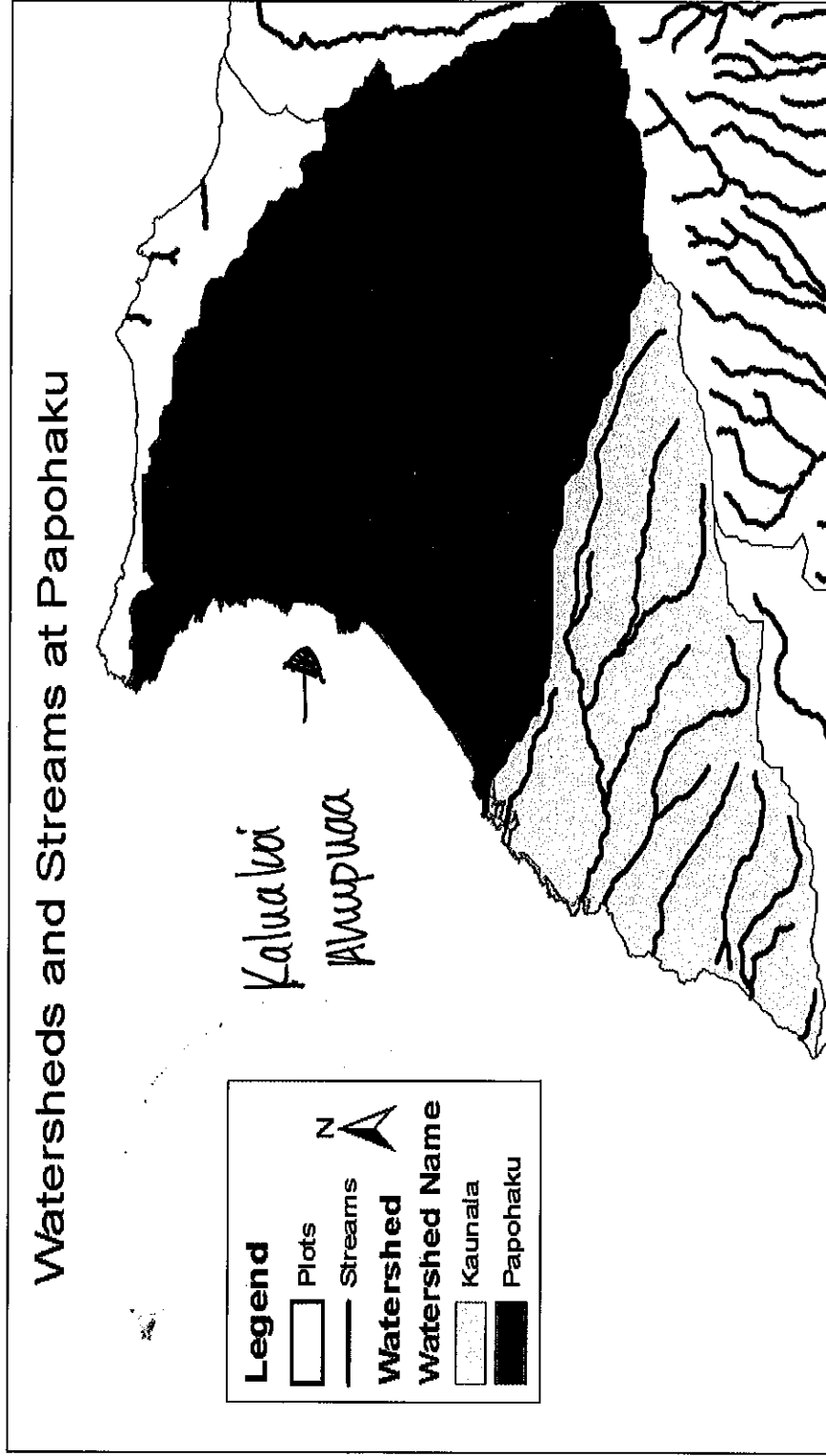


Figure 6.8: Watersheds and Sources of Streams for Pāpōhaku Streams

# Streams at Papohaku

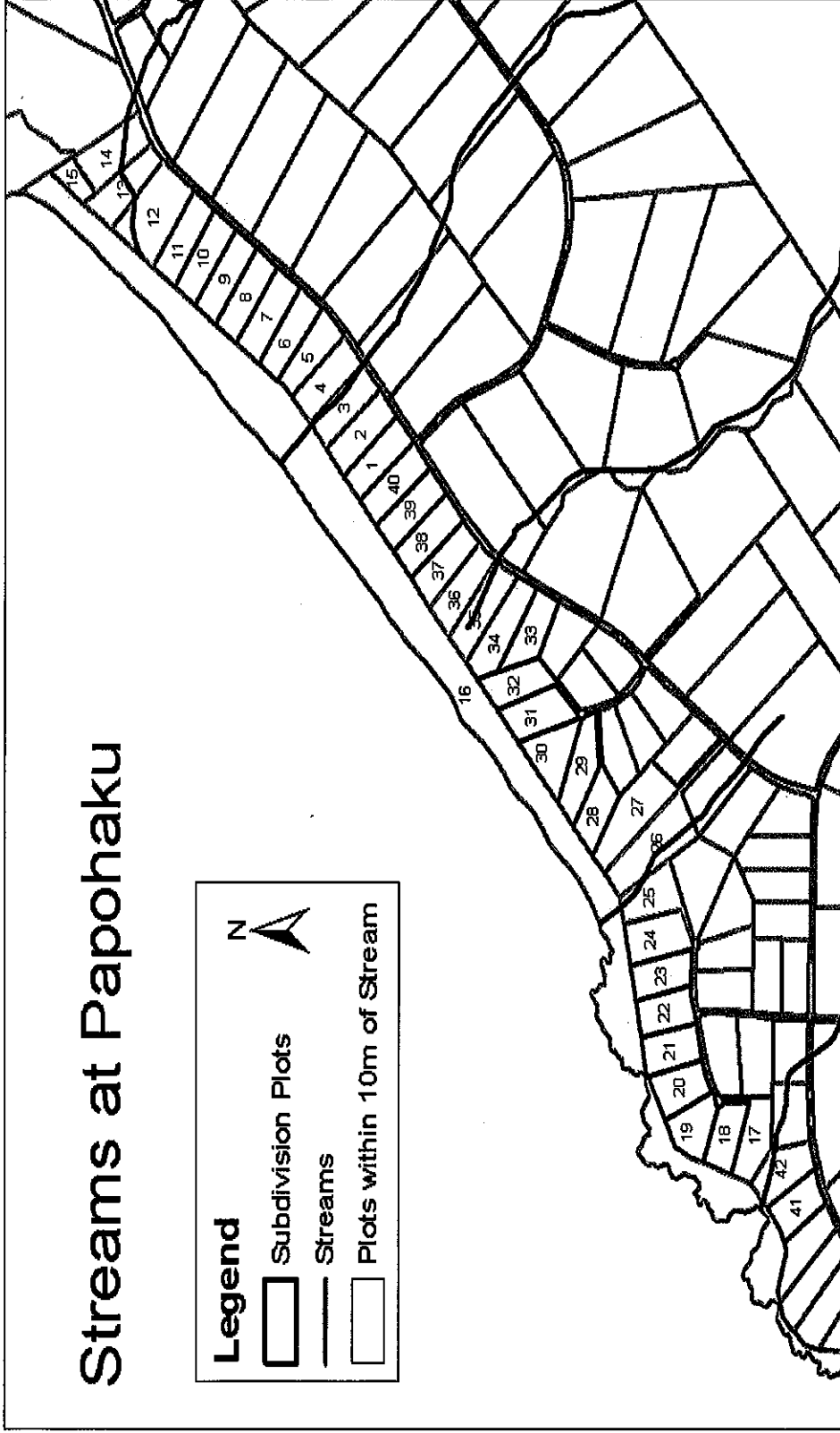
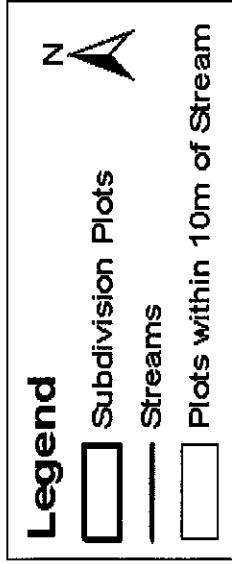


Figure 6.9: Streams at Pāpōhaku Beach

(Lot numbers do not represent TMK numbers)

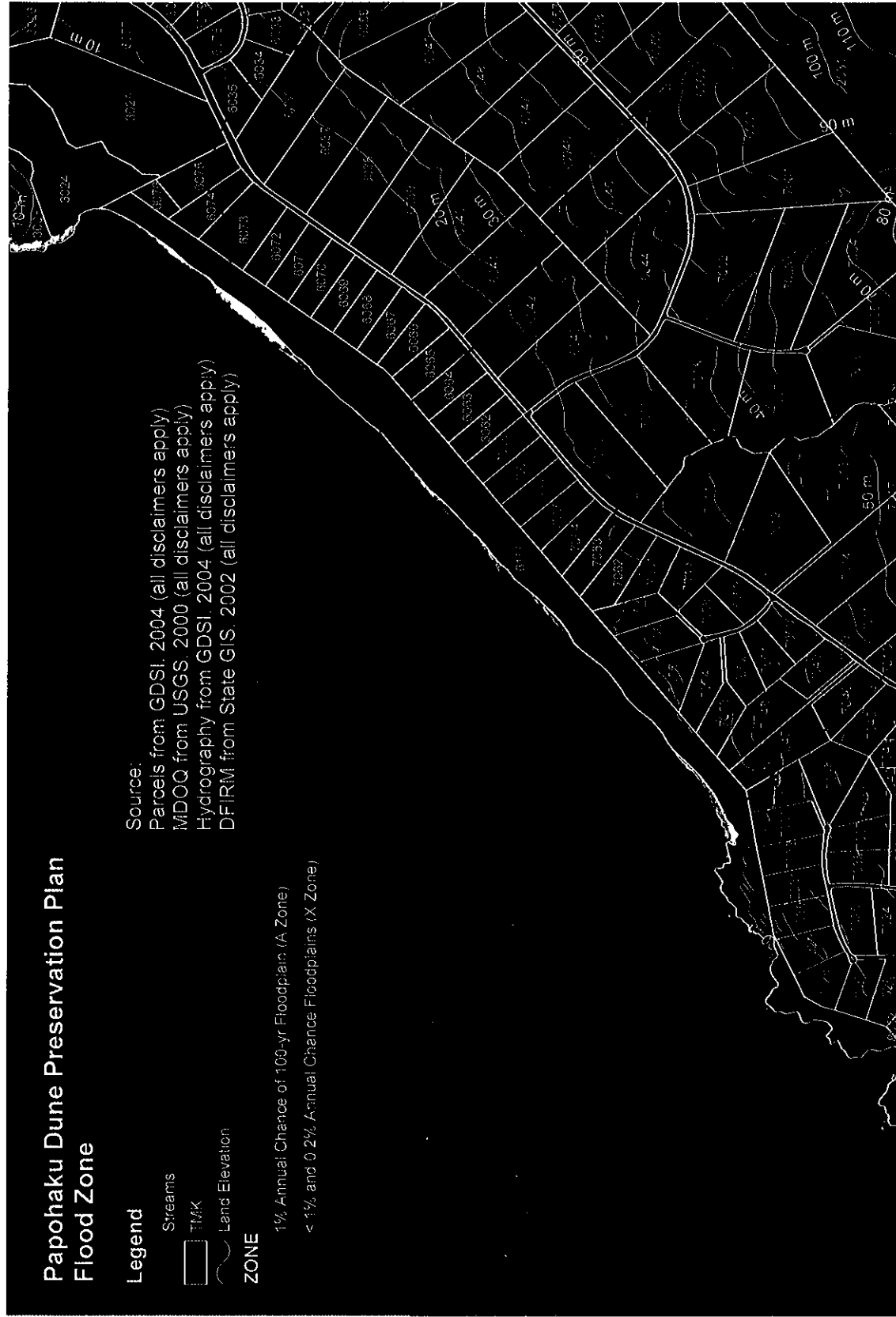
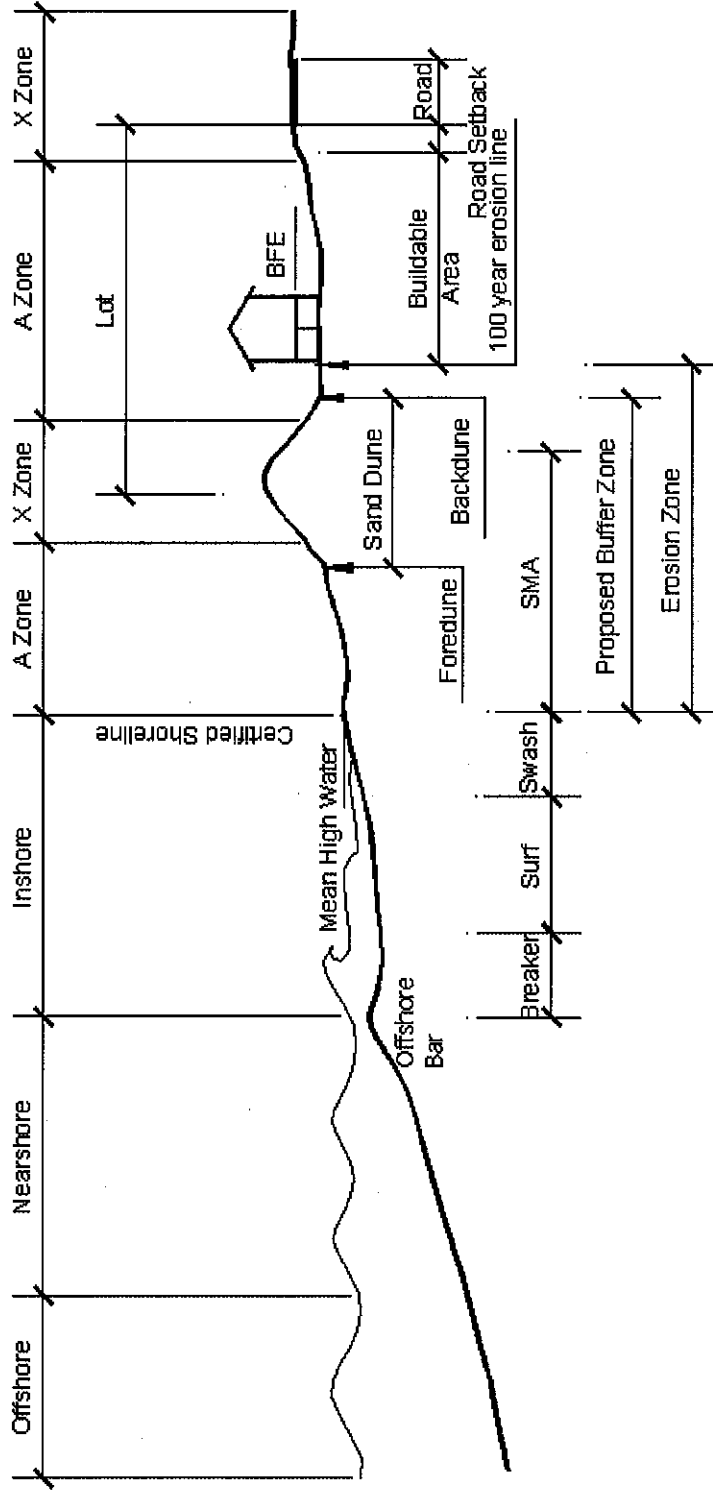


Figure 7.14: Flood Zone



**Figure 7.13: Beach Profile 1 (for TMK 6062)**

The Flood Zone Map on page 113 shows that there are three types of flood zone profiles:

- Only Zone A (across TMK 6156 and TMK 6068)
- Zone A and Zone X (across TMK 6156 and TMK 6073)
- Zone A and X and again Zone A and X (across TMK 6156 and TMK 6062)

# Vegetation at Papohaku

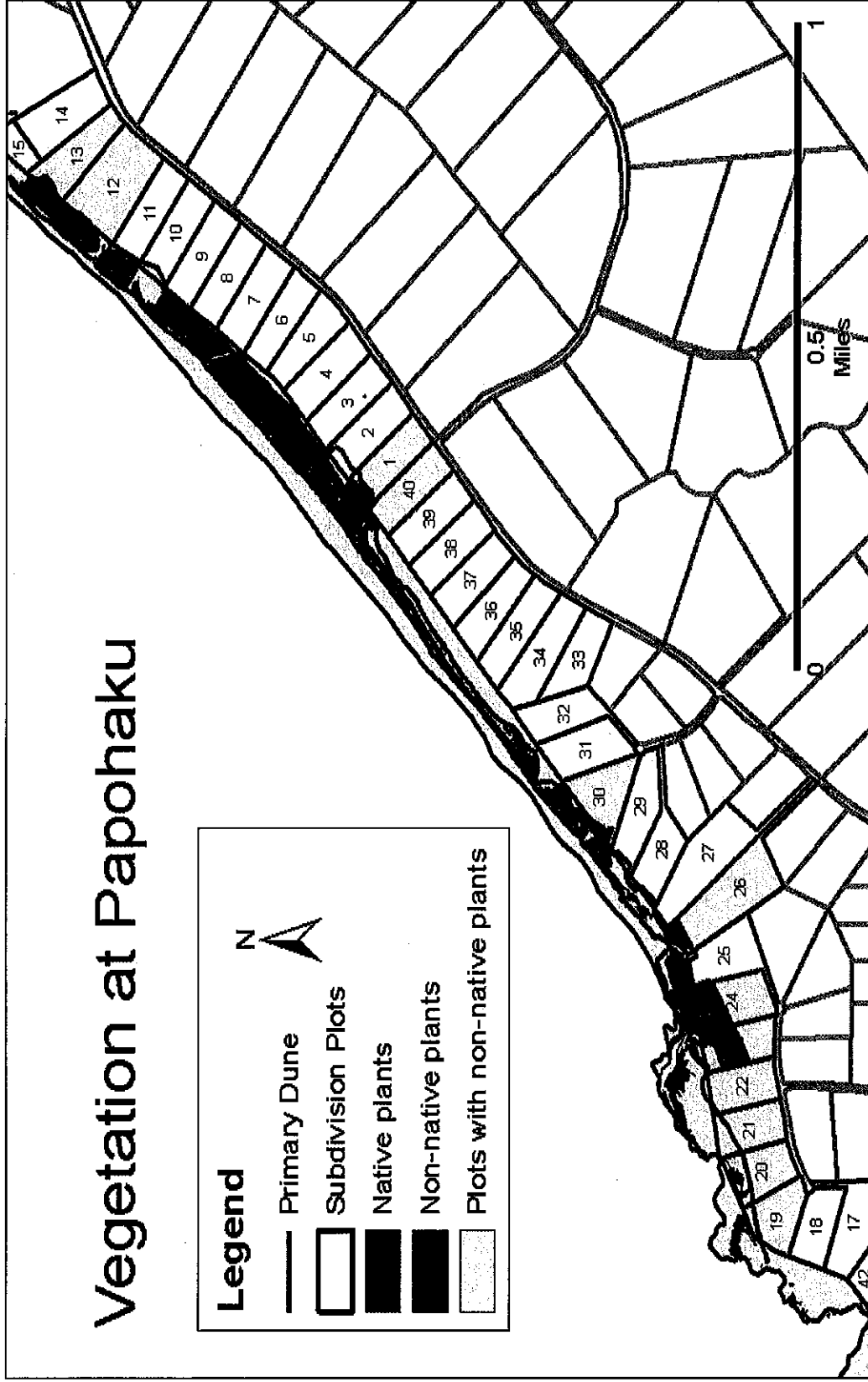
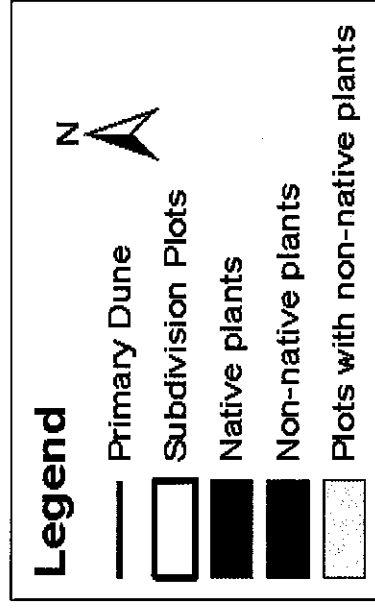
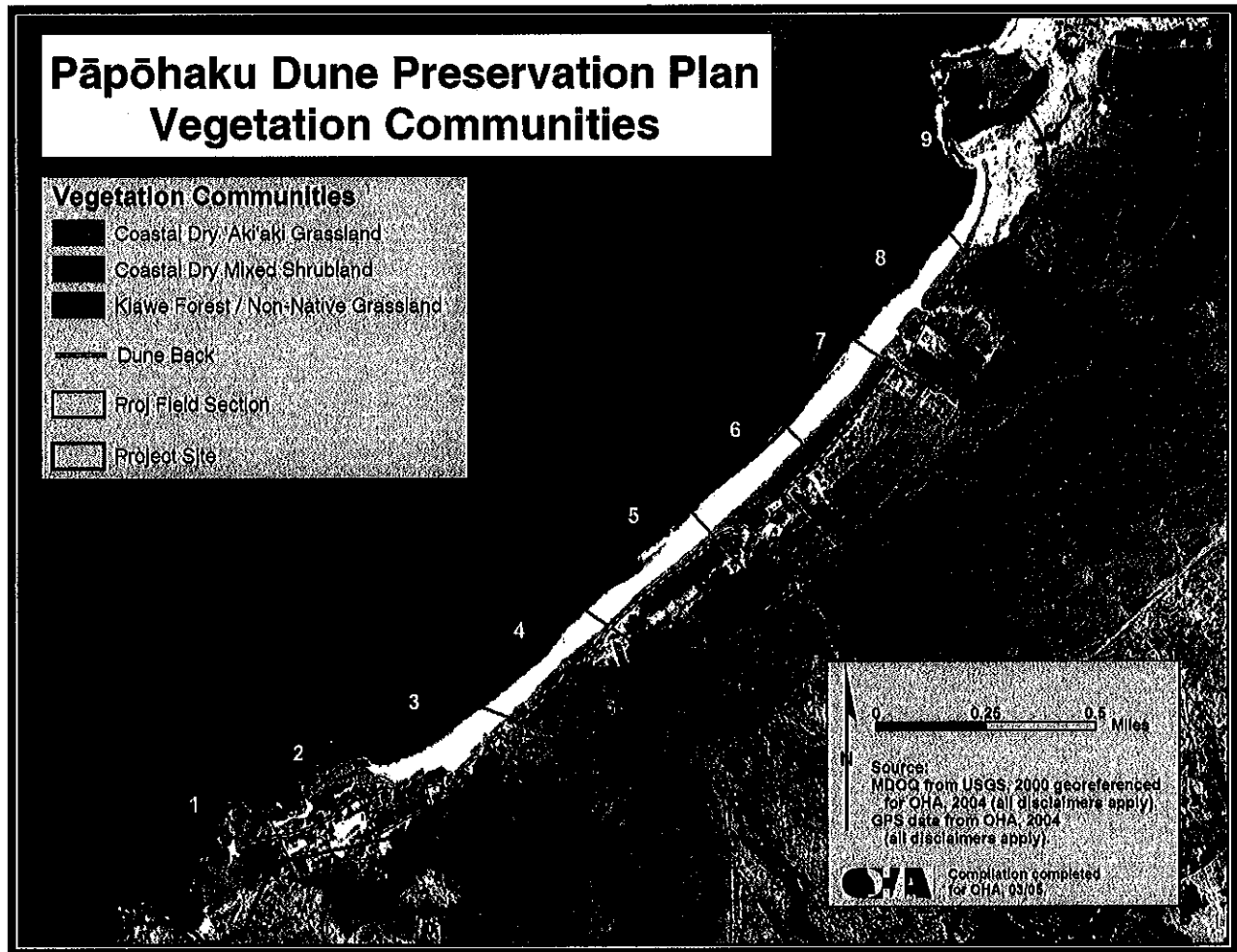


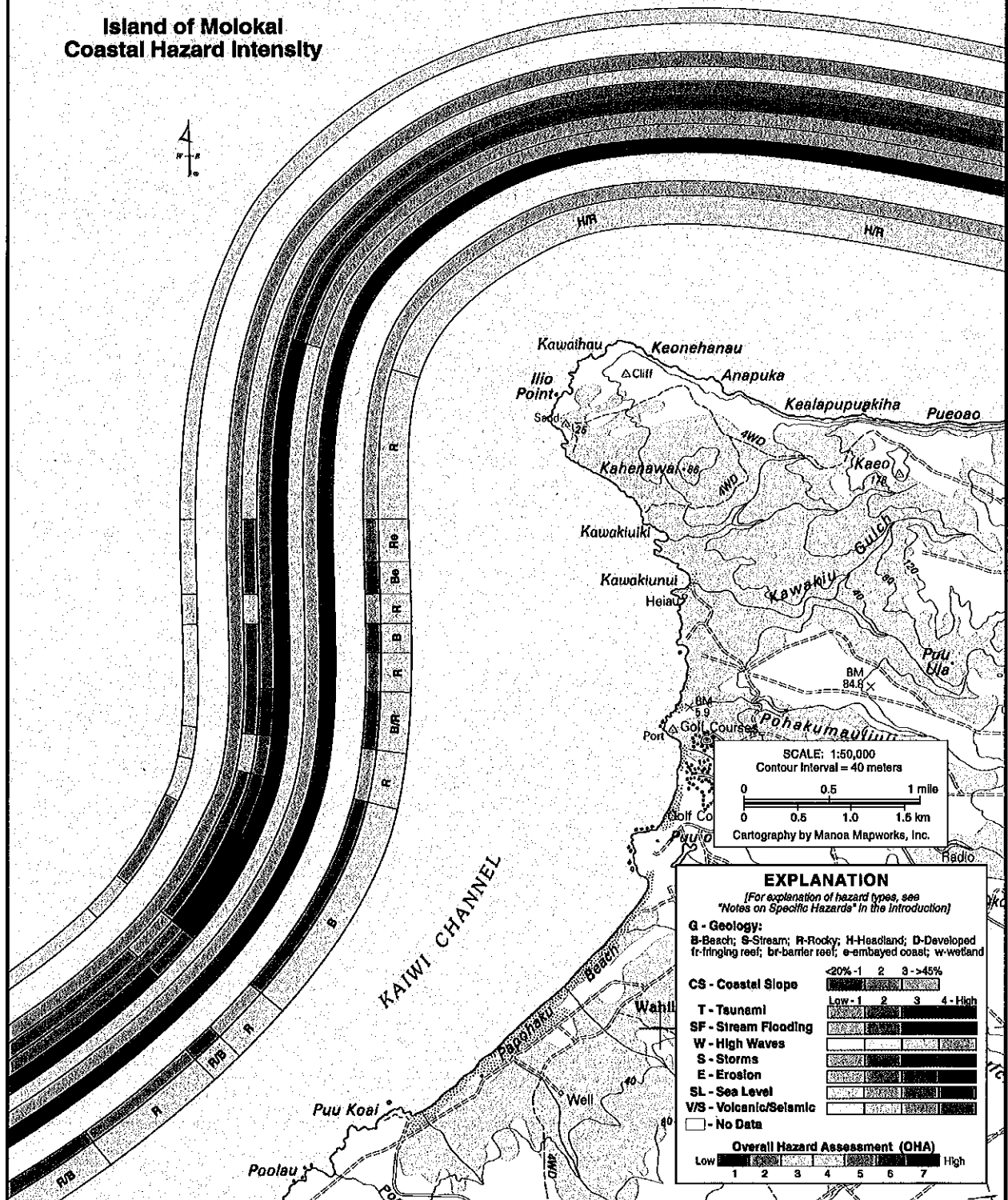
Figure 6.14: Vegetation Type at Pāpōhaku

## V. Figures

**FIGURE 1.** Map of vegetation communities in the Pāpōhaku survey area (September 2004 to March 2005).



## Island of Molokai Coastal Hazard Intensity



**Figure 7.8: Hazards at Pāpōhaku Beach (Source: Fletcher, et al, 2002)**

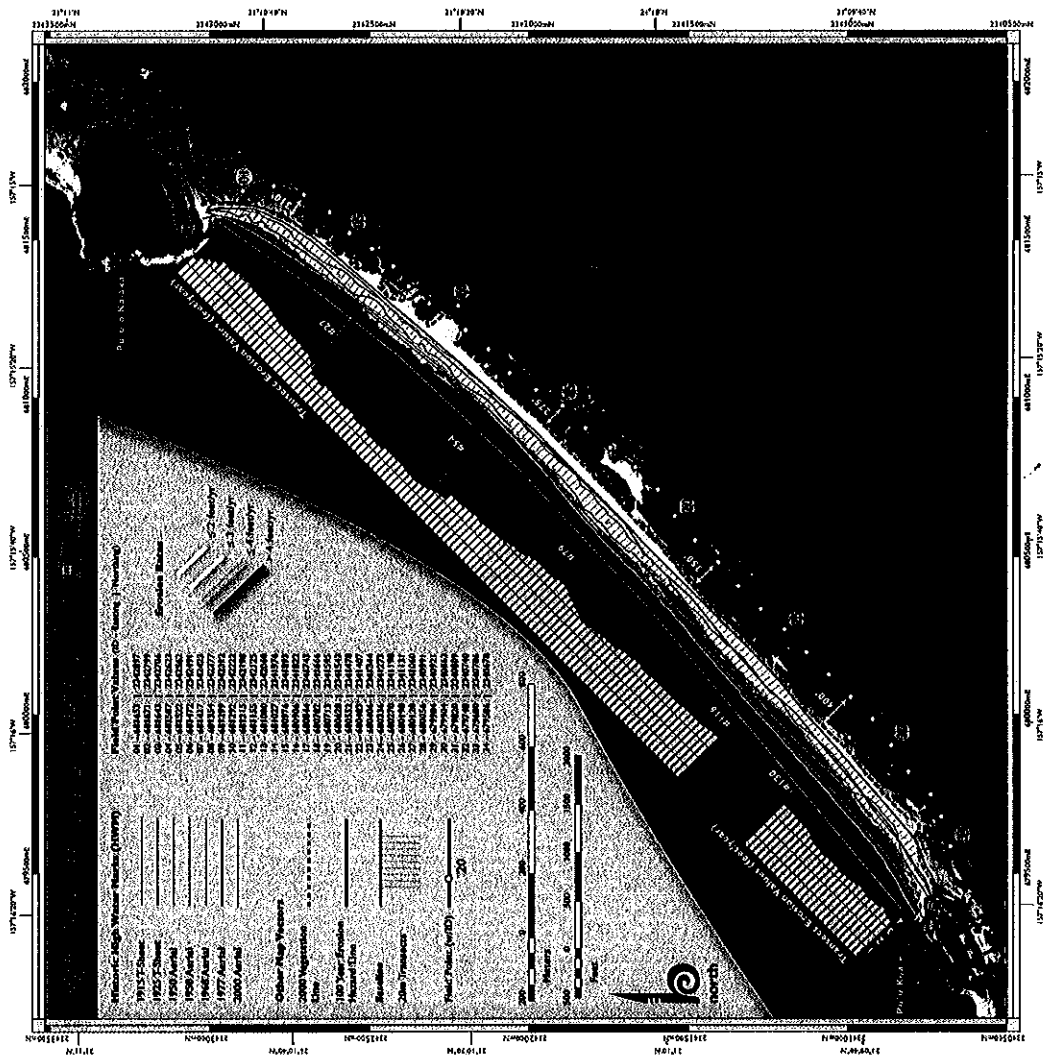
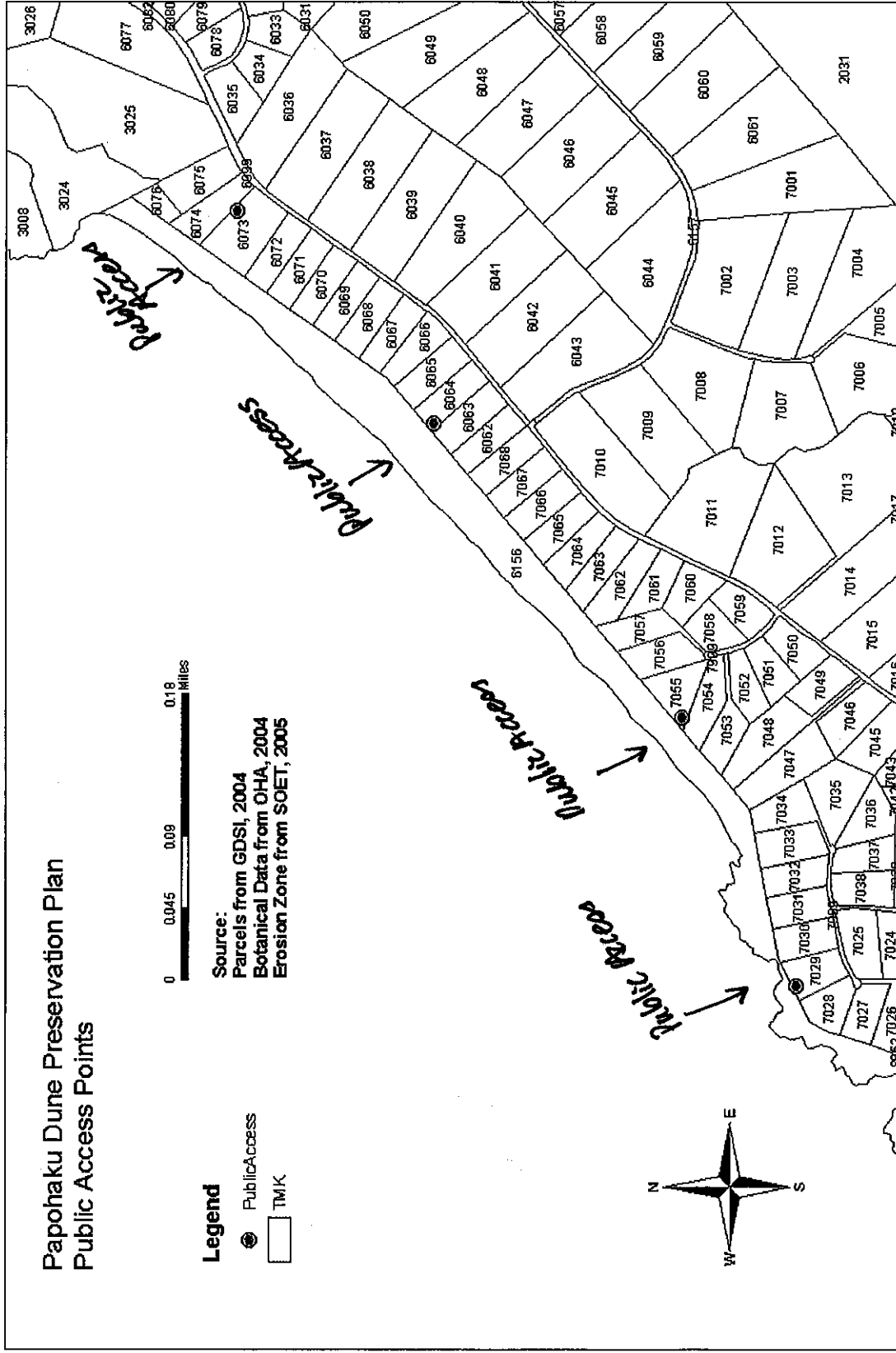


Figure 7.11: Erosion Rate Analysis at Pāpōhaku  
(Source: Fletcher, 2005)



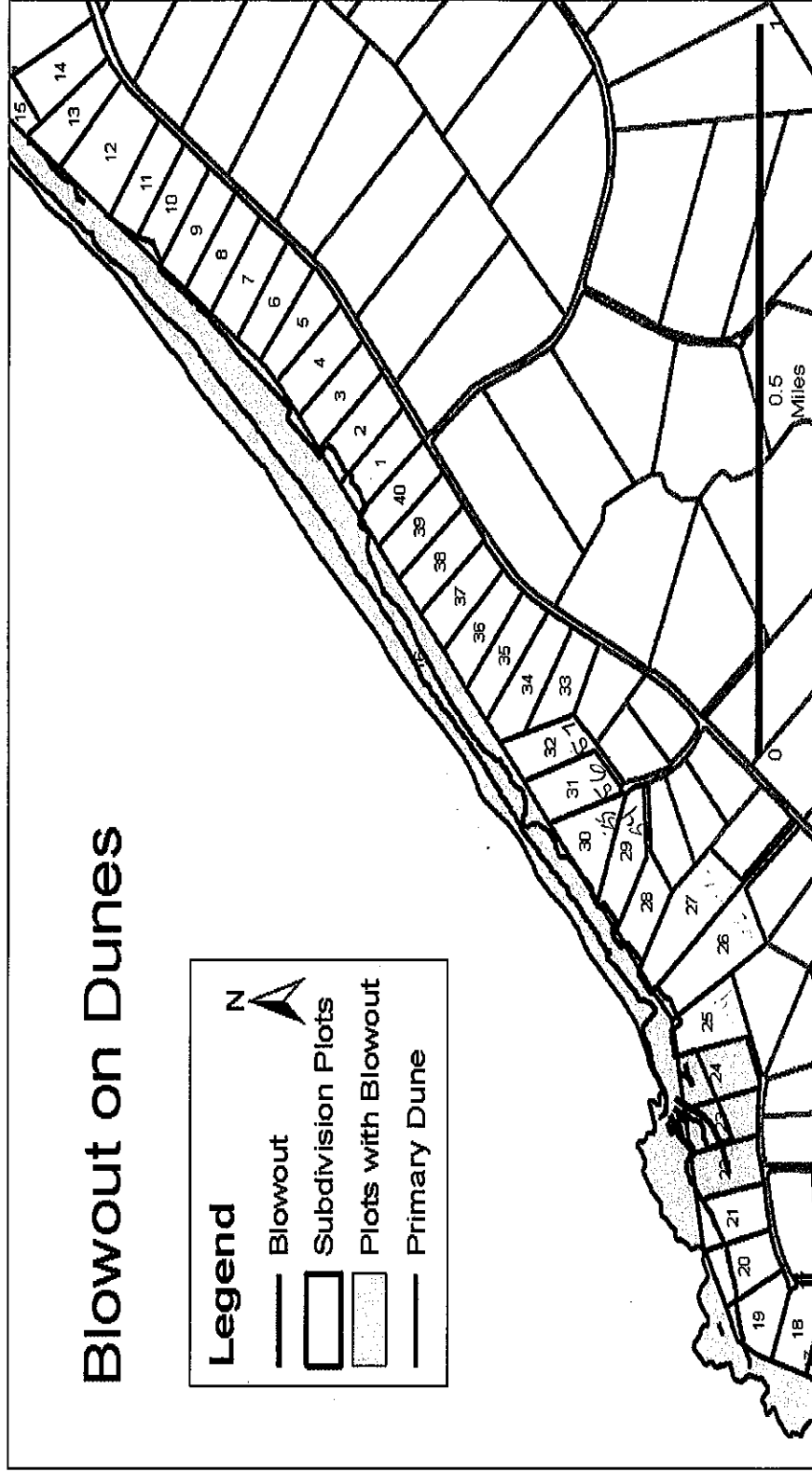


Figure 6.10: Blowout on Dunes at Pāpōhaku

(Lot numbers do not represent TMK numbers)

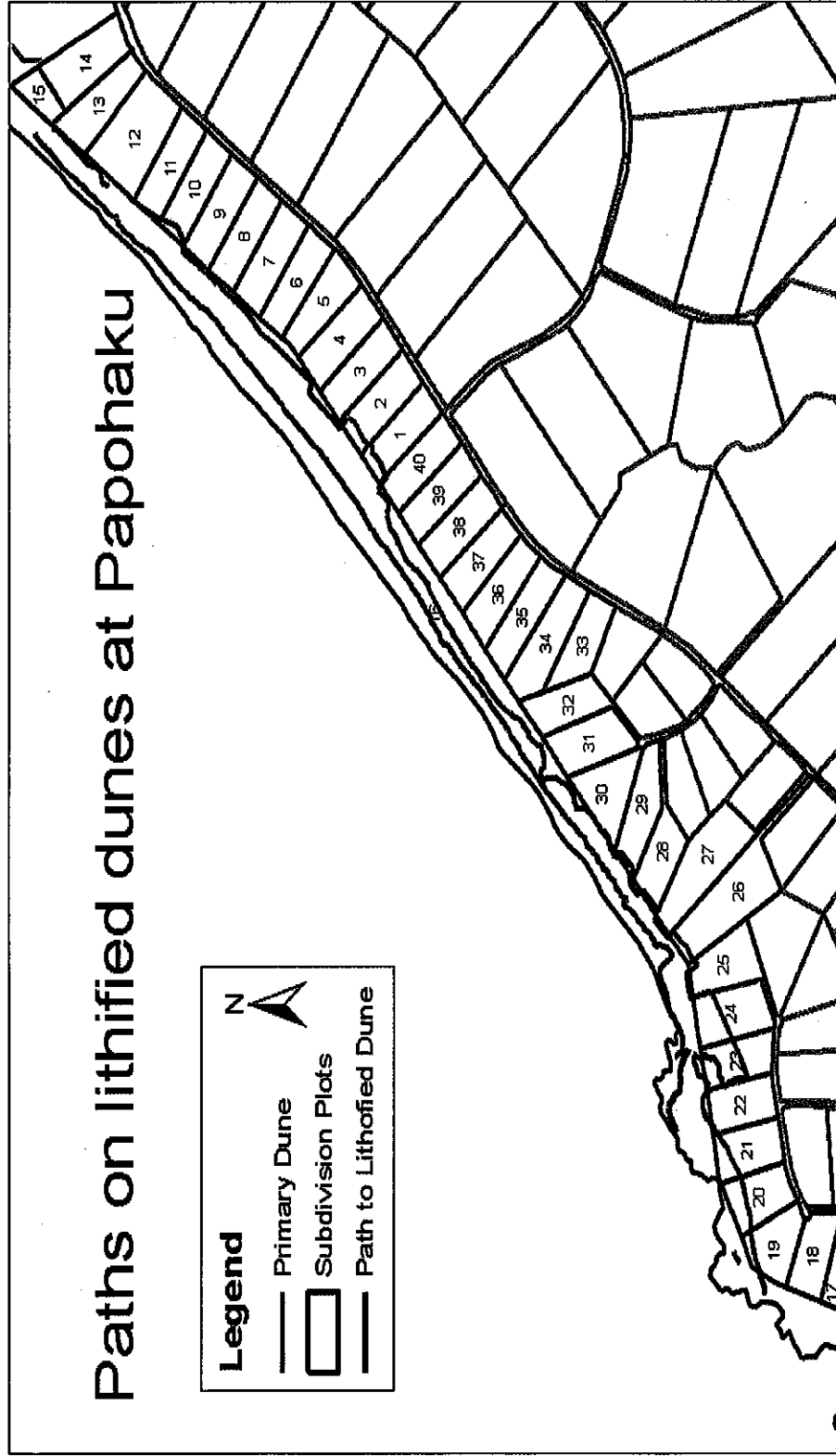


Figure 6.11: Paths on Lithified Dunes at Pāpōhaku

(Lot numbers do not represent TMK numbers)

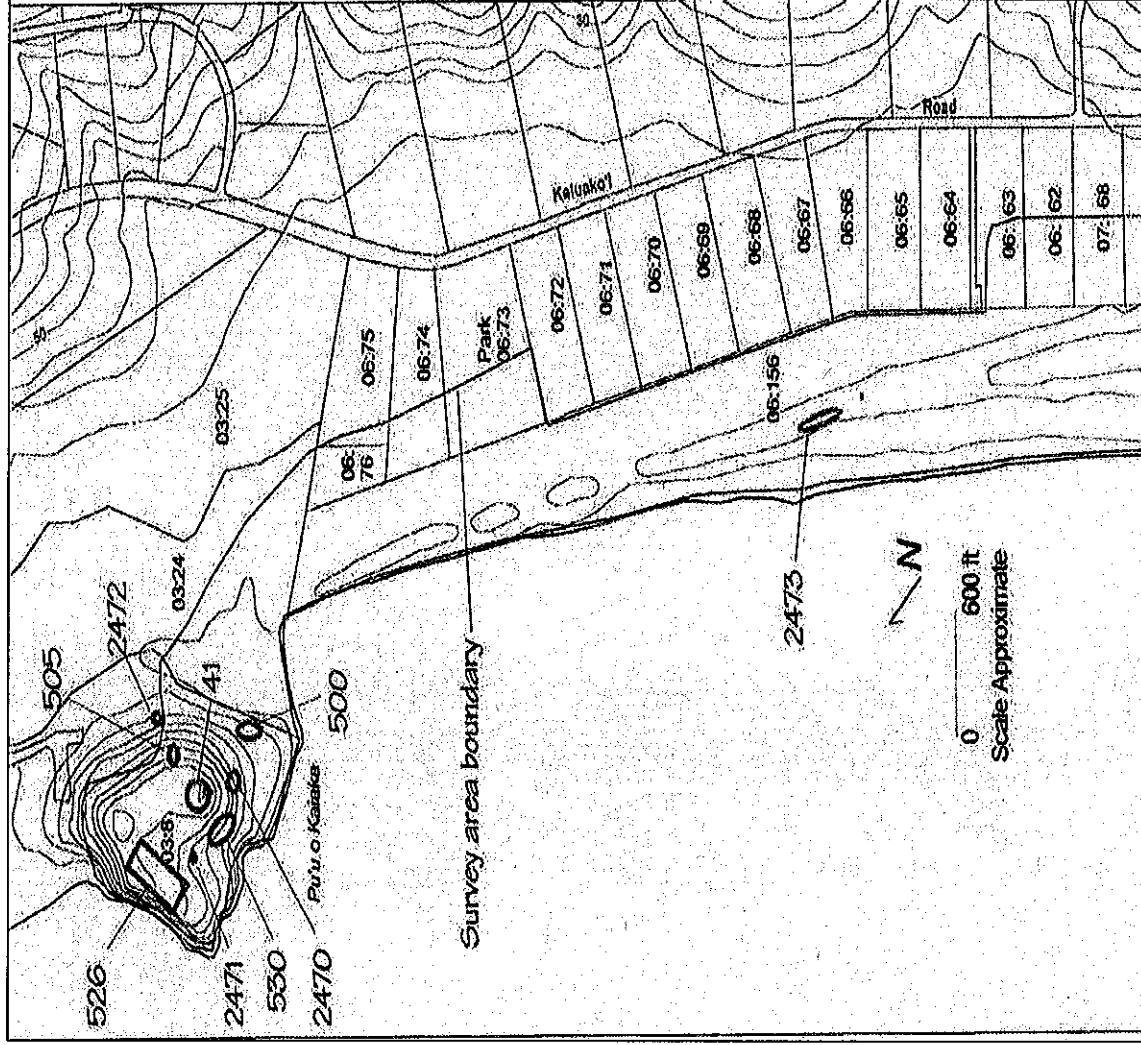
**Paths to the Shoreline at Papohaku**

**Legend**

- Primary Dune
- Subdivision Plots
- Path to Shoreline
- Plots with path to shoreline

0.5 miles

(Lot numbers do not represent TMK numbers)



**Figure 4.4: North Section of Project Area Showing Locations of Sites Identified During the Recent Survey;  
Cited in Donham (2005:22)**

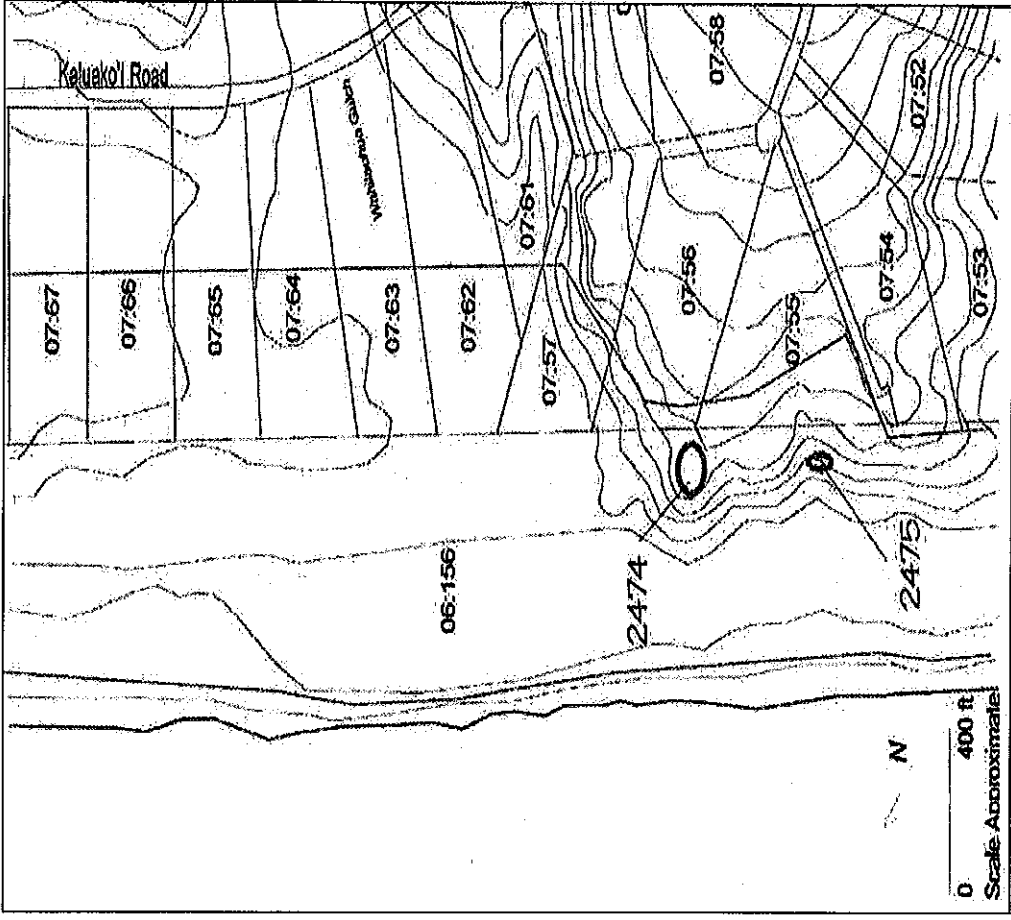


Figure 4.5: Middle Section of Project Area Showing Sites Identified During this Survey; Cited in Donham (2005:23)

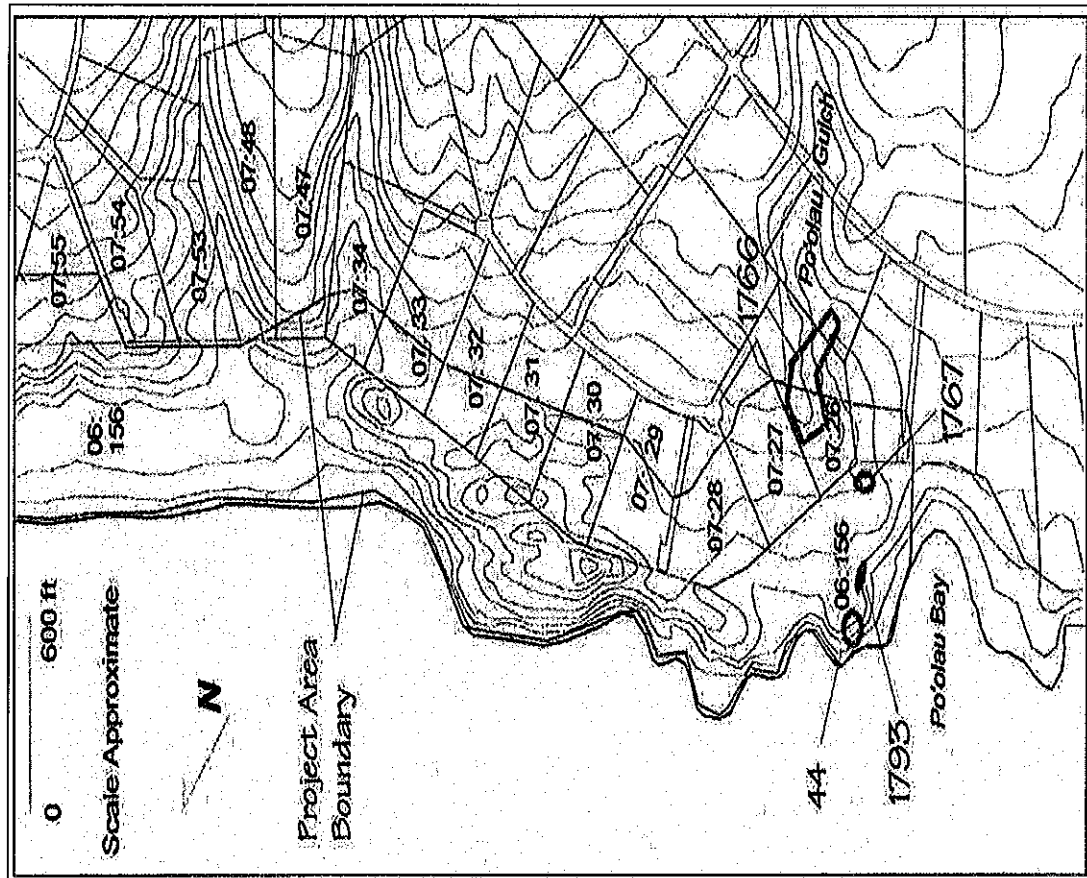


Figure 4.6: South Section of Project Area Showing Sites Identified During this Survey

## Exhibit 1

Subzone Designations: \_\_\_\_\_

- (1) "H-1, Makalawena," Hawaii, June 4, 1978
- (2) "H-2, Keahole Point," Hawaii, August 23, 1985
- (3) "H-3, Mahukona," Hawaii, August 23, 1985
- (4) "H-4, Keawanui Bay," Hawaii, June 4, 1978
- (5) "H-5, Anaehoomalu," Hawaii, June 4, 1978
- (6) "H-6, Kiholo," Hawaii, August 23, 1985
- (7) "H-7, Kailua," Hawaii, August 23, 1985
- (8) "H-8, Kealakekua," Hawaii, June 4, 1978
- (9) "H-9, Honaunau," Hawaii, December 14, 2001
- (10) "H-10, Kauluoa Point," Hawaii, June 4, 1978
- (11) "H-11, Milolii," Hawaii, August 23, 1985
- (12) "H-12, Manuka Bay," Hawaii, June 4, 1978
- (13) "H-13, Hawi," Hawaii, June 4, 1978
- (14) "H-14, Kawaihae," Hawaii, June 4, 1978
- (15) "H-15, Puu Hinai," Hawaii, June 4, 1978
- (16) "H-16, Puu Anahulu," Hawaii, June 4, 1978
- (17) "H-17, Hualalai," Hawaii, June 4, 1978
- (18) "H-18, Puu Lehua," Hawaii, June 4, 1978
- (19) "H-19, Kaunene," Hawaii, June 4, 1978
- (20) "H-20, Puu Pohakuloa," Hawaii, August 23, 1985
- (21) "H-21, Papa," Hawaii, June 4, 1978
- (22) "H-22, Pohue Bay," Hawaii, August 23, 1985
- (23) "H-23, Puu Hou," Hawaii, June 4, 1978
- (24) "H-24, Honokane," Hawaii, June 4, 1978
- (25) "H-25, Kamuela," Hawaii, June 4, 1978
- (26) "H-26, Nohoaohae," Hawaii, June 4, 1978
- (27) "H-27, Keamuku," Hawaii, June 4, 1978
- (28) "H-28, Naohueleehua," Hawaii, August 23, 1985
- (29) "H-29, Puu O Uo," Hawaii, August 23, 1985
- (30) "H-30, Sulphur Cone," Hawaii, August 23, 1985
- (31) "H-31, Alika Cone," Hawaii, June 4, 1978
- (32) "H-32, Puu o Keokeo," Hawaii, June 4, 1978
- (33) "H-33, Kahuku Ranch," Hawaii, June 4, 1978
- (34) "H-34, Ka Lae," Hawaii, June 4, 1978
- (35) "H-35, Kukuihaele," Hawaii, June 4, 1978
- (36) "H-36, Makahalau," Hawaii, June 4, 1978
- (37) "H-37, Ahumoa," Hawaii, June 4, 1978
- (38) "H-38, Puu Koli," Hawaii, June 4, 1978
- (39) "H-39, Kokoolau," Hawaii, June 4, 1978
- (40) "H-40, Mauna Loa," Hawaii, June 4, 1978
- (41) "H-41, Keaiwa Reservoir," Hawaii, June 4, 1978
- (42) "H-42, Punaluu," Hawaii, August 23, 1985
- (43) "H-43, Naalehu," Hawaii, June 4, 1978

- (44) "H-44, Honokaa," Hawaii, June 4, 1978
- (45) "H-45, Umikoa," Hawaii, June 4, 1978
- (46) "H-46, Mauna Kea," Hawaii, June 4, 1978
- (47) "H-47, Puu Oo," Hawaii, June 4, 1978
- (48) "H-48, Puu Ulaula," Hawaii, June 4, 1978
- (49) "H-49, Kipuka Pakekake," Hawaii, June 4, 1978
- (50) "H-50, Wood Valley," Hawaii, June 4, 1978
- (51) "H-51, Pahala," Hawaii, June 4, 1978
- (52) "H-52, Kukaiau," Hawaii, June 4, 1978
- (53) "H-53, Keanakolu," Hawaii, June 4, 1978
- (54) "H-54, Puu Akala," Hawaii, June 4, 1978
- (55) "H-55, Upper Piihonua," Hawaii, June 4, 1978
- (56) "H-56, Kulani," Hawaii, June 4, 1978
- (57) "H-57, Kilauea Crater," Hawaii, August 23, 1985
- (58) "H-58, Kau Desert," Hawaii, June 4, 1978
- (59) "H-59, Naliikakani Point," Hawaii, June 4, 1978
- (60) "H-60, Papaaloa," Hawaii, October 22, 1993
- (61) "H-61, Akaka Falls," Hawaii, November 23, 1987
- (62) "H-62, Piihonua," Hawaii, June 4, 1978
- (63) "H-63, Puu Makaala," Hawaii, June 4, 1978
- (64) "H-64, Volcano," Hawaii, June 4, 1978
- (65) "H-65, Makaopuhi Crater," Hawaii, June 4, 1978
- (66) "H-66, Papaikou," Hawaii, June 4, 1978
- (67) "H-67, Hilo," Hawaii, June 4, 1978
- (68) "H-68, Mountain View," Hawaii, June 4, 1978
- (69) "H-69, Kalalua," Hawaii, June 4, 1978
- (70) "H-70, Kalapana," Hawaii, August 23, 1985
- (71) "H-71, Keaau Ranch," Hawaii, June 4, 1978
- (72) "H-72, Pahoa North," Hawaii, June 4, 1978
- (73) "H-73, Pahoa South," Hawaii, June 4, 1978
- (74) "H-74, Kapoho," Hawaii, June 4, 1978
- (75) "M-1, Honolua," Maui, June 4, 1978
- (76) "M-2, Lahaina," Maui, June 4, 1978
- (77) "M-3, Olowalu," Maui, June 4, 1978
- (78) "M-4, Kahakuloa," Maui, June 4, 1978
- (79) "M-5, Wailuku," Maui, June 4, 1978
- (80) "M-6, Maalaea," Maui, June 4, 1978
- (81) "M-7, Paia," Maui, June 4, 1978
- (82) "M-8, Puu O Kali," Maui, June 4, 1978
- (83) "M-9, Makena," Maui, June 4, 1978
- (84) "M-10, Haiku," Maui, August 23, 1985
- (85) "M-11, Kilohana," Maui, August 23, 1985
- (86) "M-12, Lualailua," Maui, June 4, 1978
- (87) "M-13, Keanae," Maui, June 4, 1978
- (88) "M-14, Nahiku," Maui, June 4, 1978
- (89) "M-15, Kaupo," Maui, June 4, 1978

- (90) "M-16, Hana," Maui, August 23, 1985
- (91) "M-17, Kipahulu," Maui, July 25, 1988
- (92) "M0-1, Ilio Point," Molokai, \_\_\_\_\_
- (93) "M0-2, Molokai Airport," August 23, 1985
- (94) "M0-3, Kaunakakai," Molokai, August 23, 1985
- (95) "M0-4, Kamalo," Molokai, June 4, 1978
- (96) "M0-5, Halawa," Molokai, June 4, 1978
- (97) "Lanai," June 4, 1978
- (98) "Kahoolawe," June 4, 1978
- (99) "0-1, Kaena," Oahu, June 4, 1978
- (100) "0-2, Waianae," Oahu, June 4, 1978
- (101) "0-3, Waimea," Oahu, December 13, 2002
- (102) "0-4, Haleiwa," Oahu, August 23, 1985
- (103) "0-5, Schofield Barracks," Oahu, June 4, 1978
- (104) "0-6, Ewa," Oahu, June 4, 1978
- (105) "0-7, Kahuku," Oahu, June 4, 1978
- (106) "0-8, Hauula," Oahu, June 4, 1978
- (107) "0-9, Waipahu," Oahu, June 4, 1978
- (108) "0-10, Puuloa," Oahu, August 23, 1985
- (109) "0-11, Kahana," Oahu, March 24, 1994
- (110) "0-12, Kaneohe," Oahu, March 24, 1994
- (111) "0-13, Honolulu," Oahu, August 23, 1985
- (112) "0-14, Mokapu," Oahu, August 23, 1985
- (113) "0-15, Koko Head," Oahu, August 23, 1985
- (114) "K-1, Makaha Point," Kauai, June 4, 1978
- (115) "K-2, Kekaha," Kauai, June 4, 1978
- (116) "K-3, Haena," Kauai, August 12, 1992
- (117) "K-4, Waimea Canyon," Kauai, June 4, 1978
- (118) "K-5, Hanapepe," Kauai, June 4, 1978
- (119) "K-6, Hanalei," Kauai, June 4, 1978
- (120) "K-7, Waialeale," Kauai, June 4, 1978
- (121) "K-8, Koloa," Kauai, August 23, 1985
- (122) "K-9, Anahola," Kauai, June 9, 2006
- (123) "K-10, Kapaa," Kauai, June 9, 2006
- (124) "K-11, Lihue," Kauai, August 23, 1985